

FEBRUARY 1954

# MATERIAL *FLOW*

HANDLING • PRODUCTION • PACKAGING AND SHIPPING

FRANCHISE  
CIRCULATION

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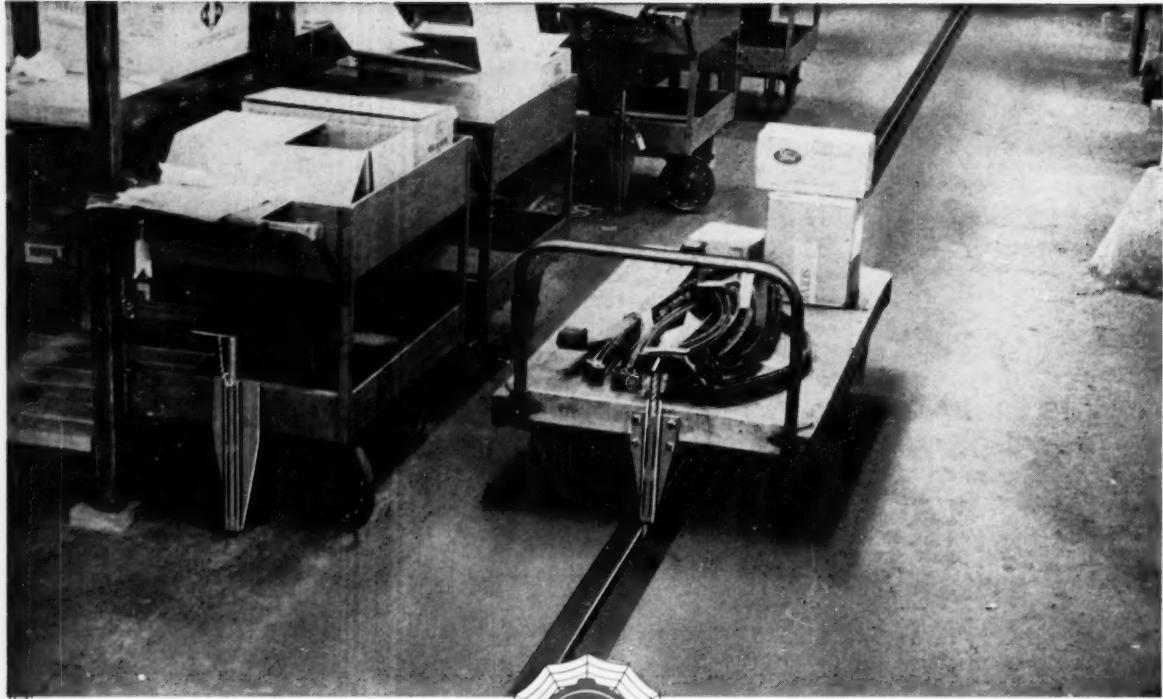
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## Flow Circulation

{ 35,827 FLOW BASIC  
108,509 FLOW QUARTERLY



# PUT THIS TOWVEYOR\*

*In Your Materials Handling Picture For . . . .*



**FASTER** travel from loading to unloading stations . . . every truck is delivered to proper destination without wasted traveling time.

**EASIER** handling — trucks engage Towveyor chain by lowering tow pin and are disengaged at any point by raising tow pin.

**SAFER** floors that are clear of obstacles . . . Towveyor eliminates overhead chains and supports and employees can safely walk or truck over any portion of the system.

Also manufacturers of apron, slat, platform, chain, assembly, belt, overhead trolley conveyors, and all types of foundry conveyors.

**ECONOMICAL** operation is a Towveyor feature . . . many installations report substantial reductions in costs and number of personnel required to handle greater volume of material.

**REDUCED ERRORS** through systematic control of materials handling . . . the establishing of constant unchanging travel patterns is an inherent feature of Towveyor systems.

**EFFICIENT** materials handling in stock rooms, warehouses, railroad and motor freight terminals, etc. is surely defined by "Faster Travel, Easier Handling, Safer Floors, Economical Operation and Reduced Errors."

\*Towveyor is a registered trademark identifying floor truck conveyors patented, manufactured and installed by the Jervis B. Webb Company.

**JERVIS B. WEBB CO.**  
*Conveyor Engineers and Manufacturers*  
3935 ALPINE AVENUE • DETROIT 4, MICHIGAN

*Send for fully illustrated catalog that provides complete information on Webb floor type conveyors.*



OFFICES IN PRINCIPAL CITIES OF THE WESTERN HEMISPHERE AND LONDON, ENGLAND  
FACTORIES: DETROIT • LOS ANGELES • HAMILTON, ONTARIO

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# Get the right Industrial Tire for the job

*—through your Goodyear Dealer—distributor of  
America's largest line of Industrials*

Goodyear's Famous All-  
Weather Tread—gives top  
traction and high resistance  
to cutting and chipping—  
even on wet surfaces.



Here's a way you can get the long-term savings of job-fitted tires for your plant operation—and do it at regular industrial tire prices. Call in your Goodyear Dealer.

He can fit your needs from over 100 different solid tire types and sizes plus a full line of pneumatic and semi-pneumatic industrials.

In addition, he will recommend the tread and tire compound which best suit your floor surfaces—whether they're rough, smooth, wet, or oil-slicked.

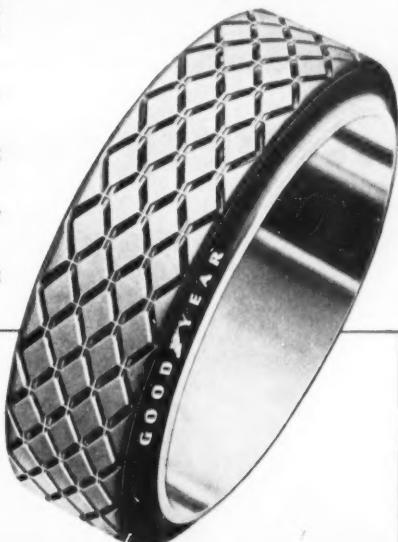
And thanks to the convenient location of Goodyear warehouses, your Goodyear Dealer can promise quick delivery on your order.

So get acquainted with your Goodyear Dealer soon. Let him help you select the industrial tires for your particular needs.

## Solid Facts for Solid Users

Did you know

- that you can get chip-resistant UN Compound or oil-, acid-, and chip-resistant OR-Compound at no extra cost?
  - that many sizes of steel wheels can now be converted to easy-rolling, floor-saving Goodyear "molded-ons"?
- Call your Goodyear Dealer for details.  
Or, for the name of your nearest dealer, write Industrial Tire Dept., Goodyear, Akron 16, Ohio.



All-Weather—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

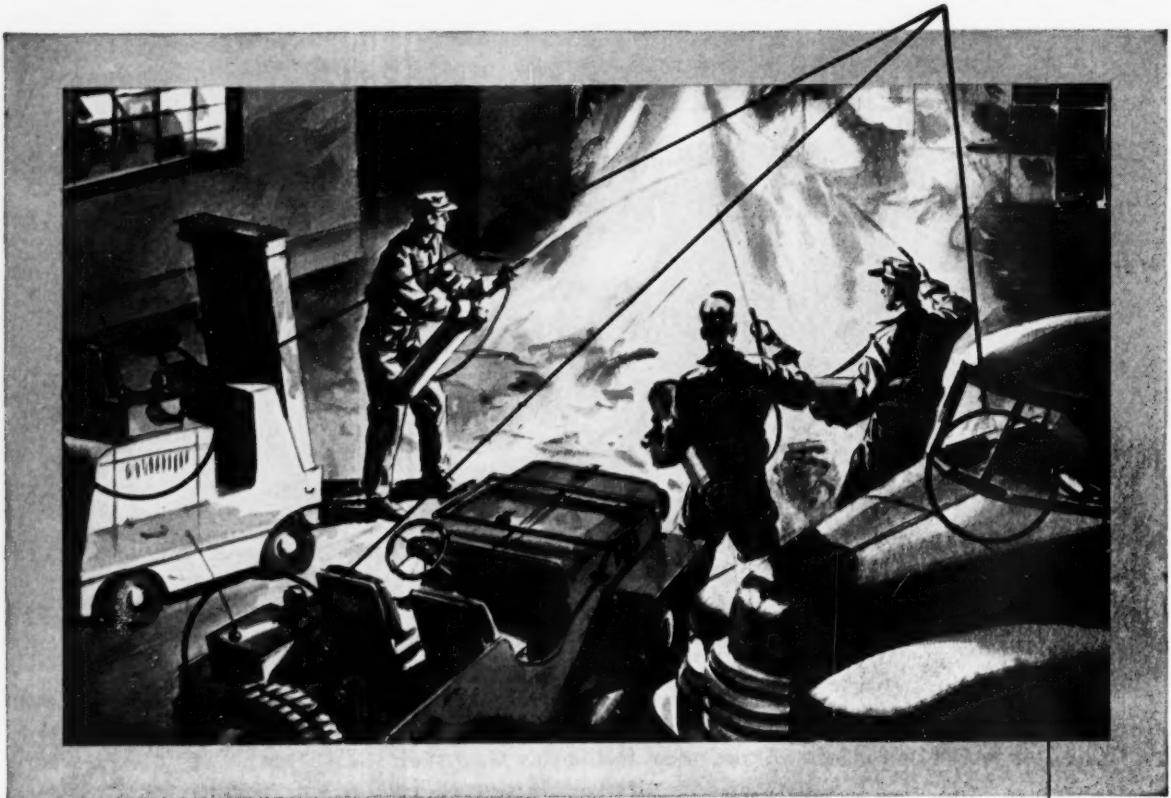
# GOOD YEAR

INDUSTRIAL TIRES

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Radio Network—THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network  
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FLOW • FEBRUARY, 1954

# Another reason for **2-WAY RADIO**



## ...every reason for G-E

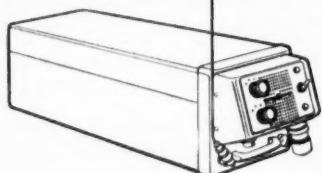


**2-WAY  
MOBILE  
RADIO**



**FREE!** Get this booklet and see how G-E 2-way radio communication efficiently organizes industrial production. Write: General Electric Company, Section 3224, Electronics Park, Syracuse, New York.

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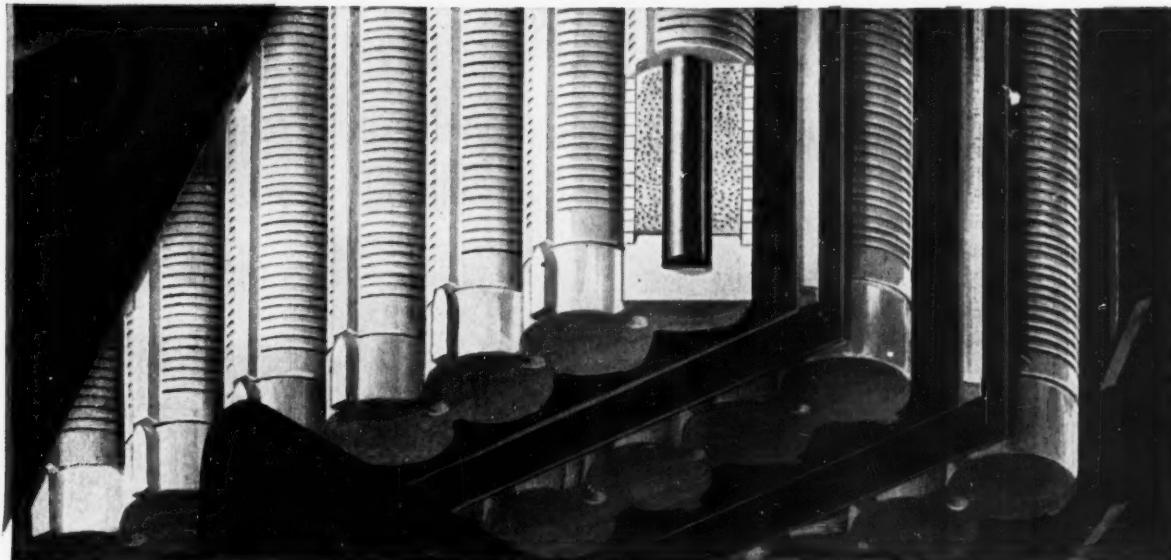
EQUIP your trucks with radio and your plant gains not only the primary advantage of increasing present production rates but you've added, in effect, an efficient fire protection system at *amazingly low cost*. Pick General Electric 2-way radio for this job and you get the plus benefits of communications equipment designed for industrial applications.

It will pay you to see G.E.'s new industrial mobile radio. Designed for outstanding *plant* performance plus exceptionally low maintenance! Take advantage of General Electric's experience in the industrial communication field! Get that built-in quality that assures satisfaction!

**GENERAL ELECTRIC**

For industrial trucks...Exide-Ironclad now offers

- ★ 20% more capacity in the same space
- ★ Lowest cost per A.H. to own and operate



This cutaway picture shows the inside of the new T H EXIDE-IRONCLAD Battery.

Its larger positive plates, containing corrosion-resistant Silvium, are different . . . unique . . . exclusive! No other type of positive plate construction offers you the advantages of the T H Exide-Ironclad, with its slotted plastic tubes, permanently sealed on the bottom with polyethylene tube sealer. More active material is exposed to the electrolyte, resulting in greater power. More active material is retained, pro-

viding higher battery capacity for a longer working life. Other features include improved negative plates . . . practically indestructible Pormax separators . . . new sealing compound . . . shockproof molded jar . . . unbreakable quarter-turn vent plugs of plastic . . . corrosion-resistant tray coating.

All of the features of the new T H Exide-Ironclad Battery construction provide direct operating-hour savings for you.

*Now-more than ever before...  
YOUR BEST POWER BUY AT ANY PRICE!*

1888... DEPENDABLE BATTERIES FOR 66 YEARS...1954

The new T H  
**Exide-Ironclad**  
BATTERY

**Thrifty hauler**



THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 2 • Exide Batteries of Canada, Limited, Toronto  
"EXIDE", "EXIDE-IRONCLAD", "SILVIUM", "PORMAX", Reg. T.M. U.S. Pat. Off.

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Get them all...in one!

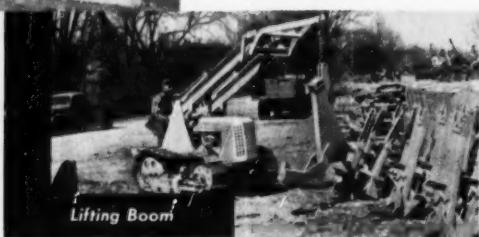
## OLIVER "OC-3"

TRACTOR-LOADER



Backfiller

Snow Plow



**Quick change does it!** In minutes, the "OC-3" tractor-loader converts easily to any of the tools shown here. You beat the cost of separate equipment for each job. You operate year-round in any ground condition doing more work...saving time, eliminating delays. The simple controls, all-hydraulic loader and maneuverability of this unit let you work where larger tractors cannot reach. Savings on equipment, hauling costs, (takes only a light trailer or truck) to say nothing of fuel economy, will pay for your "OC-3" tractor-loader in a short while.

Write today for a copy of a new folder on the "OC-3" tractor-loader, or visit your Oliver Industrial Distributor for complete details.

**THE OLIVER CORPORATION**

400 West Madison Street, Chicago 6, Illinois



a complete line of industrial wheel and crawler tractors

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AND AIR CONDITIONING

# MATERIAL **FLOW**

FEBRUARY, 1954

VOLUME 9, NO. 5

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Published Monthly

"Acceptance under section 34.64 P. L. & R. authorized at Pontiac, Illinois."

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# Look at all the features that are built right into the **OMIC HAND PALLET TRUCK**



Fast-acting hydraulic pump; full five-inch lift ensures smooth travel over rough, uneven surfaces.

Twin front wheels for high maneuverability.

Ball bearings fitted in all wheels and steering swivel.

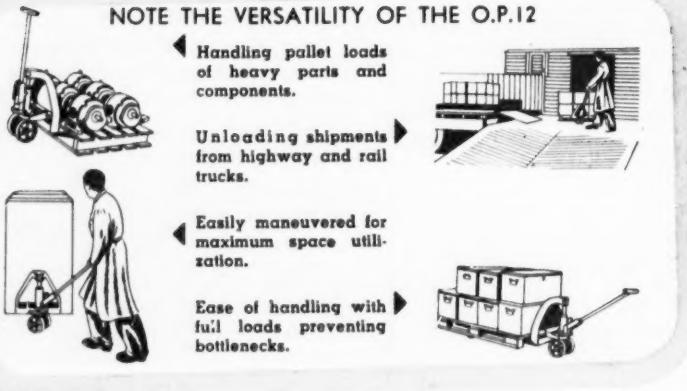
Overloading prevented by factory-set relief valve.

Hard chrome-faced rams and pump piston assure long life.

- Rubber or steel tires to suit customers' requirements.
- Quick and easy detachment of hydraulic unit for service or replacement.
- Controlled lowering speed.
- Pressed steel forks for high strength.
- Capacities—2,600 lb. and 4,000 lb.
- Fork lengths—36", 42", 48".
- Widths overall forks—20½", 27".

- Model illustrated, has been produced to meet universal demand for a pallet truck of high quality and modest cost. It is designed for the simplicity and strength that guarantee long life and trouble-free service.

#### NOTE THE VERSATILITY OF THE O.P.12



American Representatives:

**PALITON, INC.**  
40 WEST 29th ST., NEW YORK 1, N. Y.  
MURRAY HILL 4-6531

Head Office:

**OMIC, LTD.**  
9 GEORGE ST., LONDON, W1, ENGLAND

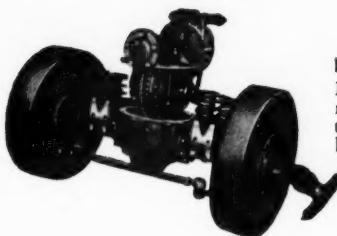
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# each of 16 ELWELL-PARKER ten-year-olds averages only 1 hour per month maintenance!



The fleet of Elwell-Parkers at Jack & Heintz, Inc. frequently operates on a 24-hour-per-day-basis. Since no high tiering is involved, *low lift platform trucks* are used. They are lighter than comparable fork models. Floor maintenance is thus reduced. Their short length and short turning radius (all wheels steer) make them extra maneuverable in close quarters.

some plus values of E-P trucks that explain this remarkable record:



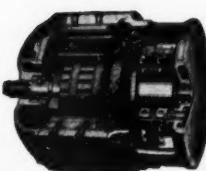
#### DRIVE AXLES

Efficient, silent worm reduction units of heat-treated alloys. Ruggedly built and easily serviced.



#### TRAIL AXLES

Fully articulating steering axles assure longer tire life. Dust-proofed, anti-friction bearings in steering rods and wheels reduce maintenance—make steering easy.



#### MOTORS—E-P BUILT

Practically indestructible and fireproof. Armature coil-commutator connections are brazed, not soldered. Double brushes mean more current capacity and less wear.



#### "ROLOTAC" CONTROLLER

Provides exact truck control, because trigger snap and sliding action assure instant make or break—eliminate arcing. All contact fingers and their parts are interchangeable.

**LIFT JACK**—A simple mechanism—3 moving parts—worm, worm wheel, and ram, protected by overload slip clutch.



get all the facts Send for General Catalog that describes 150 models. Write The Elwell-Parker Electric Co., 4232 St. Clair Ave., Cleveland 3, Ohio.

**ELWELL-PARKER**  
**POWER INDUSTRIAL TRUCKS**

Established 1893

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## 336\* reasons why . . .

\*Individual cutters on 16" Revo-tool accessory drum for model "K" Tennant Floor Machine. Available in various types and sizes.

### YOUR FLOORS CAN BE CLEANED FASTER WITH A TENNANT INDUSTRIAL FLOOR MACHINE

**When these alloy steel cutters**, mounted on the spinning drum of a Tennant Floor Machine, bite into thick incrusted grime—small wonder it literally vanishes! Hardened grease and tar, granite-like cement splashes, thick accumulations of dried paint, chips, metal cuttings—all are sheared from floors by the high speed pulverizing action of the Tennant Revo-tool.

#### REMOTES ALL GRIME IN 1 FAST OPERATION

With this rugged, drum-mounted accessory on a powerful, heavy-duty Tennant Industrial Floor Machine, one man alone can clean any factory floor in a few minutes.

This operation cuts soilage loose and picks it up at same time . . . leaves floors clean, dry, ready for traffic . . . cuts cleaning costs . . . eliminates need for soap, water, chemicals or scraping . . . doesn't interfere with plant operation.

Available in gas or electric models for 12" or 16" drum accessories.

**WRITE TODAY** for new illustrated bulletins on Tennant Industrial Floor Machines for heavy industry applications. Specify 12" or 16" accessories; gas or electric power.

#### G. H. TENNANT CO.

2576 North 2nd Street

MINNEAPOLIS 11, MINNESOTA



REVO-TOOL attachment pictured above. Ideal for heavy soilage.

WIRE BRUSH, 20, 30 or 39 ga. steel; diagonal pattern, won't clog nor streak.

STEEL WOOL roll for high speed dry cleaning of wood floors.

Other drum accessories for sanding, polishing, scrubbing.

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#### Safety Issue Scores Substantial Success

(The extent to which all industries are concerned with safety as it is promoted by better material handling is indicated in these representative letters and abstracts of communications. For further comments, see "Highlights of the Month's News".)

#### To FLOW:

Your special section on Material Handling Safety in the December, 1953, issue of FLOW is most commendable.

Are reprints of this thorough safety article available, and how can they be obtained? We are interested in quotes for two hundred reprints to use in our Material Handling Training Program.

N. G. Schaffer  
Material Handling Engineer  
Western Electric Company

#### To FLOW:

Purchase order: 15 complete copies of article, "An Industry Headache", on material handling accidents appearing in the December 1953 issue of FLOW Magazine. Include all 39 pages.

D. W. Bergstrom  
Bergstrom Paper Company

#### To FLOW:

Your Safety Issue is the finest thing that's ever been produced on this most important subject. It is a major contribution to industry.

Please give me a quotation for 1000 reprints which I may distribute to my customer list.

E. M. Abramson  
Ohio Equipment Co.



## Specs for high profit levels

Mechanical specs are important. But, you know from your own experience that your biggest profits come from things less tangible. Like new ideas, for example. At Rapistan we put a lot of emphasis on ideas . . . to give you a better return on your materials handling investment: New ideas for better use of equipment, new ways to use standard conveyor units in "customized" systems, and new wrinkles that improve general performance.

Or, take service. It's tough to specify service in detail. But it has substantial effect on your profits. That's why Rapistan maintains more than 50 sales-service agencies across the country. You get the dependable supervision of factory-trained specialists from the original survey of your needs, on through installation and maintenance. You'll find Rapistan always on the spot with the service you want — when you want it.

And, even in considering equipment, specifications don't usually tell the entire story. Unless you *know*, intimately, what makes for dependable quality, you can be fooled. Your best measure is the reputation of the maker. "Rapistan" means mighty good assurance of quality.

**Usefulness through many years** is what makes Rapistan conveyors profitable. Standardized construction to allow lengthening of units, and ease of moving them around are factors to assure this. Rapistan conveyors are being relocated in different assignments every day.

If you need a conveyor system, small or extensive, this is worth remembering: all Rapistan conveyor units, both power and gravity, may be used together in an almost endless range of economical combinations. The profitability of this Rapistan principle is being proved daily in almost every field of business. We'd like to prove it to you. You can start us by sending the coupon at right.

### Proof in your own field

See how other firms in your field have solved handling problems like yours. Simply indicate your interests on chart below. We'll send illustrated Field Reports with complete data on problems as they existed, equipment installed, results obtained. No obligation, send today.

#### Please check your business classification:

Manufacturing    Agricultural    Wholesale    Retail

Check reports below which will be of greatest benefit to you:

- |   |  |
|---|--|
| <input type="checkbox"/> Aircraft Parts     | <input type="checkbox"/> Heating Equipment     |
| <input type="checkbox"/> Auto Supplies      | <input type="checkbox"/> Household Appliances  |
| <input type="checkbox"/> Beverages          | <input type="checkbox"/> Laundry Services      |
| <input type="checkbox"/> Building Supplies  | <input type="checkbox"/> Leather Products      |
| <input type="checkbox"/> Canneries          | <input type="checkbox"/> Machine Parts         |
| <input type="checkbox"/> Chemicals          | <input type="checkbox"/> Magazines, Newspapers |
| <input type="checkbox"/> Cosmetics          | <input type="checkbox"/> Meat Packing          |
| <input type="checkbox"/> Dairy Products     | <input type="checkbox"/> Metal Stamping        |
| <input type="checkbox"/> Fabricated Metals  | <input type="checkbox"/> Paint Products        |
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There are many other Rapistan Field Reports. If your business is not listed, please write us regarding your special needs.

**The RAPIDS-STANDARD COMPANY, Inc.**  
Representatives in Principal Cities  
163 Rapistan Building, Grand Rapids 2, Mich.

Name \_\_\_\_\_

Company \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# Rapistan®

BETTER CONVEYING EQUIPMENT  
CONVEYORS, gravity and power belt • INDUSTRIAL CASTERS • WHEEL-EZY® TRUCKS

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## LETTERS

Continued

### To FLOW:

We were very impressed by the article in the December issue on "Cutting Outdoor Handling Risks". We would like to know if it would be possible to obtain reprints . . .

The "20 Rules" sheet ("20 Rules for Safe Operation of Power Shovels and Cranes") might be more useful to us on cardboard or very heavy paper which could be posted in contractors' shacks or in machines.

D. L. Schumacher  
Flack Equipment Company

### To FLOW:

Many thanks for sending us a copy of the article "Elevators and Hoistways", which appears in the December issue of FLOW. It is an excellent article.

. . . it imparts a vital message to those men responsible for the handling of materials. Articles such as this could do much in decreasing the accidents which occur on freight elevators, due to laxity on the part of the men, and a lack of knowledge of the equipment.

L. M. Setane  
Otis Elevator Company

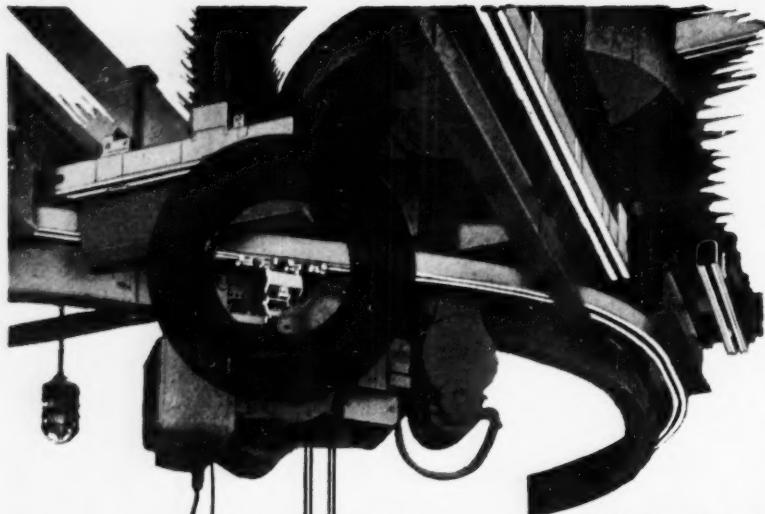
### To FLOW:

. . . You are to be complimented on the excellent safety articles in the December issue which, to me, constitute one of the most powerful . . . arguments one can find for . . . properly designed and installed mechanized handling equipment.

R. C. Soilenberger  
Executive Vice President  
Conveyor Equipment Manufacturers Assoc.

### To FLOW:

Having just read the special section on Safety in the December,



**ELECTRIC FEEDRAIL**  
*Reliability* will keep your  
cranes and hoists rolling!

SOLD BY OVER 1,000  
ELECTRICAL DISTRIBUTORS  
COAST TO COAST



**RELIABILITY** is one of the big reasons Feedrail is so widely favored for powering electric cranes and hoists. User after user will tell you—"We've never had a minute's trouble with our Feedrail system." That's because Reliability is inherent in Feedrail's expertly-engineered, trouble-eliminating design and rugged high-precision construction.

**FEEDRAIL RELIABILITY** is your insurance against crane and hoist stoppages . . . it keeps them rolling! What's more, Feedrail assures maximum safety to personnel . . . easy adaptability to changing requirements . . . a very minimum of maintenance. And, its prefabricated units are so simple to install!

#### GET THE FULL DETAILS

Write today for descriptive bulletin. Direct your request to Feedrail Corp., Department F-2.



53-3



**FEEDRAIL CORPORATION**

Subsidiary of Russell & Stoll Company, Inc.

125 BARCLAY STREET • NEW YORK 7, N.Y.

**SPECIALLY QUALIFIED REPRESENTATIVES IN PRINCIPAL CITIES**

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# NEW BAKER "Yardloader"

TRADE-MARK

## 4000 LB. GAS FORK TRUCK COSTS ONLY \$2985.00



Priced about 25% under any other gas trucks in its capacity, the Yardloader now brings cost-saving fork truck operation within the reach of practically every company with yard-handling problems. Travel speed approaching 14 miles per hour, large pneumatic tires, exceptionally high ground clearance and oscillating trail axle make it the ideal truck for outdoor service

over large unimproved or semi-improved areas.

Heavy-duty industrial engine of proven make, 4-speed transmission and extra-heavy drive axle assure ample power for top performance under any conditions. Hydraulic lift to 122 inches, automotive-type steer, convenient controls and excellent driver visibility are a few of the features contributing to safety and ease of operation.

Get all the facts—and save up to \$1000.00  
on your next gas fork truck.

Send in this coupon today.

**THE BAKER-RAULANG COMPANY**  
1219 West 80th Street • Cleveland 2, Ohio

*The Baker-Lull Corporation • Subsidiary, Minneapolis, Minn.  
Materials Handling and Construction Equipment*

FLOW • FEBRUARY, 1954

Circle No. 146 on Reader Service Card for more information

TO THE BAKER-RAULANG CO., 1219 West 80th St., Cleveland 2, Ohio

Please send me information and specifications on the new  
Baker EY-40 Yardloader which sells for only \$2985.00.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**SIMPLICITY AND INGENUITY have made**

## *American* STORAGE RACKS

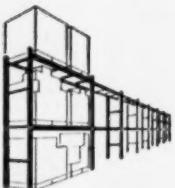


AN EXCLUSIVE  
AMERICAN FEATURE



Adjustable Pallet Racks

*First Choice*  
YEAR AFTER YEAR



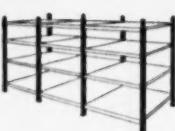
Standard Pallet Racks



Skid Racks



Drum & Barrel Racks



Tool & Die Racks



Coil Racks & Tiering Racks

Send for Catalogue!



ADJUSTABLE PALLET RACK Installation  
Parke Davis & Co., Detroit, Michigan

**AMERICAN**  
**METAL PRODUCTS CO.**

**STORAGE RACK DIVISION**  
5959 Linsdale • Detroit 4, Michigan

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### LETTERS

*Continued*

1953, issue of your magazine, I would like to congratulate you on a very interesting and informative presentation.

We would like to obtain . . . reprints . . . if they are available.

These articles would be especially valuable to us in developing training programs for proper procedures in Material Handling.

F. H. Brown  
Training Coordinator  
Kimble Glass Company

#### To FLOW:

In the December issue of FLOW Magazine we found standard crane hand signals as per the attached illustration.

Please advise if you have these available in either paper or card form.

O. L. Armacost  
Findlay Division  
Gar Wood Industries, Inc.

#### TO FLOW:

We have read the article entitled, "Trouble Shooting Chart for Wire Rope" . . . in the December, 1953, issue of FLOW.

We are interested in reproducing this Chart for issue to our salesmen.

C. T. Evenden  
Service Engineer  
Jones & Laughlin Steel Corp.

#### To FLOW:

We are interested in obtaining . . . additional copies of your feature article, "An Industry Headache", which appears on pages 57 through 83 in your December, 1953 issue.

R. J. Verner  
Safety Engineer  
Fruin-Colnon Contracting Co.

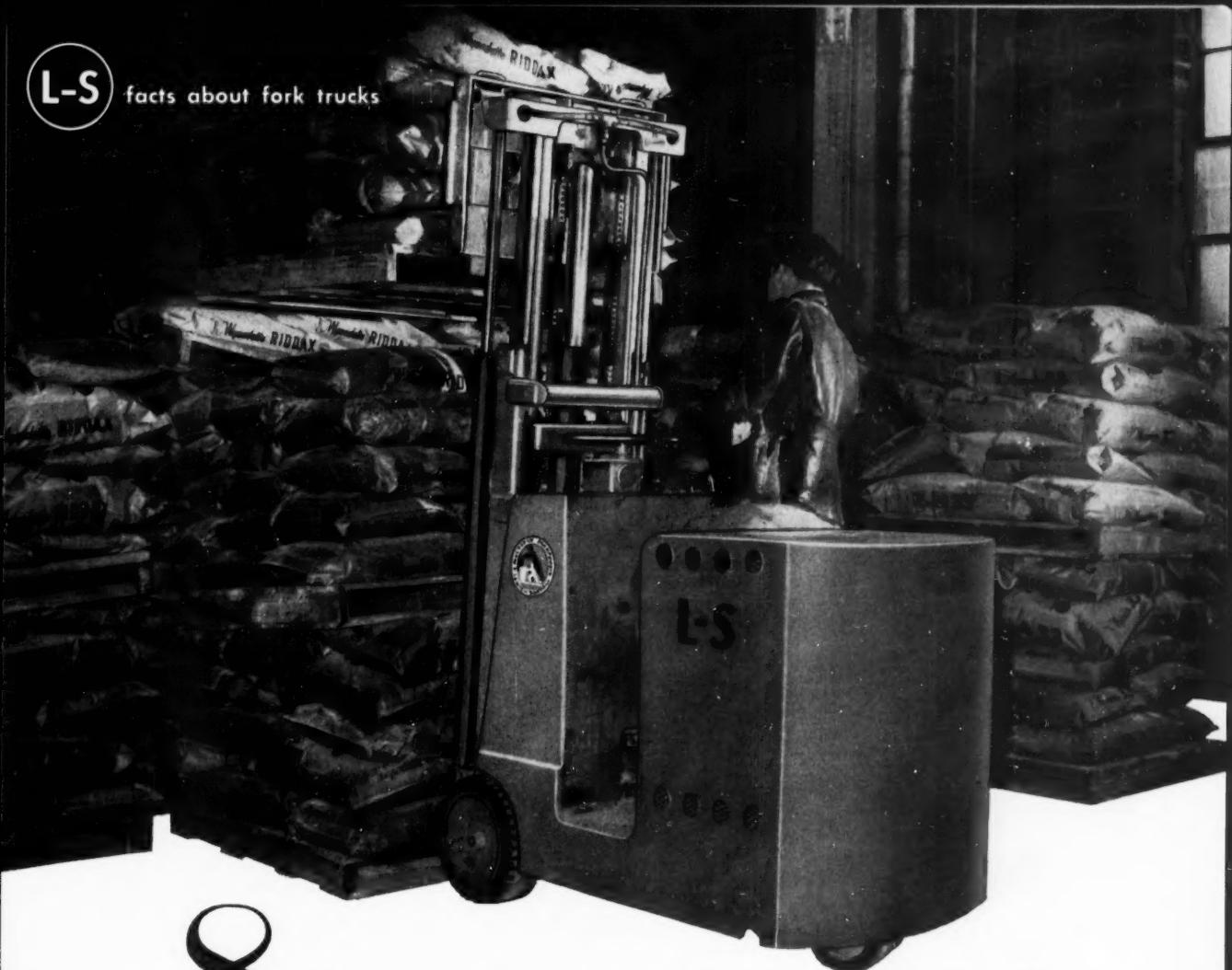
#### To FLOW:

We are interested in your feature section on Safety published

Circle No. 82 on Reader Service Card →  
FLOW • FEBRUARY, 1954

**L-S**

facts about fork trucks



## 8 tips on how to buy a Fork Truck

### 1. Get Proof of Dependability



See how others have shaved costs, improved efficiency. Ask for a demonstration or send for Lewis-Shepard case history "Proof Folders".

### 4. Compare Operating Costs



Check L-S against any other truck. "Maintenance Report Forms" make it easy to keep track of your operating costs.

### 7. Know the Manufacturer and his Local Facilities

Check his business reputation and the extent of his service organization in your area. The local L-S man is listed in your Yellow Pages.

### 2. Compare Gas & Electric Trucks



"Gas vs. Electric Folder" gives facts about power, maintenance, depreciation cost. Shows you a digest of others' experience.

### 5. Choose from a Broad Line



Whatever your needs, an intelligent application can be made from L-S Catalogs—showing the most complete line of trucks available.

### 8. Above All, Know the Reputation of the Product

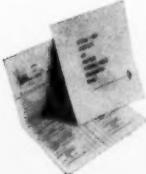
Here's one measure:

Listed are a few of the "blue-chip" companies\* who have recently reordered L-S Electric Trucks.

Glass Mfg. Co.	22 L-S in use—reordered 9
Elec. Mach. Mfr.	297 L-S in use—reordered 35
Motor Car Co.	45 L-S in use—reordered 5
Retail Store	106 L-S in use—reordered 10
Rubber Co.	28 L-S in use—reordered 6

\*Names on request

### 3. Compare Competitive Trucks



"Comparison Charts" let you check features of all makes. See for yourself the superiority of Lewis-Shepard Trucks.

### 6. Consider Attachments



Attachments can multiply your fork truck's flexibility. L-S "Attachment Folders" give detailed information.


**LEWIS-SHEPARD**

104-2 Walnut St., Watertown 72, Mass.

*The MASTER*   
Please send me information on 1 2 3 4 5 6 7 8.  
(Circle items from above Buying Tips)

Name..... Title.....

Company.....

Address.....

City..... State.....



## Here's a Handy Chain for Positioning Loads

• The short links in this 125 Endweldur ACCO *Registered Sling Chain* can be wrapped around small projections and over sharp corners. The greater tensile strength of the alloy material permits use of light weight chain that is easy for the machine operator to handle. The two 6-foot legs can be used as a double bridle, double choker, or in a double basket hitch as illustrated.

This is only one of many types of ACCO *Registered Sling Chains* available for lifting castings, sheet steel, pallets, machines, machine parts, quenching baskets, and the like. You can get AMERICAN Sling Chains as small as  $\frac{1}{4}$ " or as large as  $1\frac{1}{4}$ "—with sling, grab, or foundry hooks—or special hooks for plates, etc. They are all individually proof-tested, registered, and an identification ring is permanently attached.

**See your AMERICAN CHAIN distributor today  
or write our York, Pa., office for copy of DH-130**

**ACCO**



AMERICAN CHAIN DIVISION  
AMERICAN CHAIN & CABLE

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles,  
New York, Philadelphia, Pittsburgh, Portland,  
San Francisco, Bridgeport, Conn.

Circle No. 4 on Reader Service Card for more information



## LETTERS

*Continued*

in FLOW, December 1953 . . . If reprints are available, we would like to have six copies for plant distribution.

We may need additional copies later and would like to know in what quantities they might be available.

P. A. Bartholomew  
The New Jersey Zinc Co.

To FLOW:

Request for Quotation: 20 Copies of special section on Material Handling Safety, Dec. 1953 issue of FLOW Magazine.

R. C. Schmidt  
The B. F. Goodrich Co.

To FLOW:

Please send one dozen reprints of FLOW December—Material Handling and Accidents and Industrial Headache.

A. J. Tess  
Glidden Co.

To FLOW:

Will you kindly send us . . . tear sheets on (safety) subjects, as shown in the December, 1953, issue of FLOW Magazine.

C. F. Moody  
Phelps Dodge Copper Products Corp.

To FLOW:

In reviewing the December issue of your magazine, we were extremely interested in the articles under the special section on safety. We wonder if this section is available as a reprint. If so, we would certainly appreciate a copy to be placed in our research files.

Thomas J. Berk  
Safety & Occupational Health Bureau  
Metropolitan Life Insurance Co.

**We'll Be Glad to Pass  
Other Leads Along**

To FLOW:

I have two queries.

1. I am interested in locating a manufacturer of dumping equipment that can satisfactorily dump liquids from 55 gallon drums, both bung type and open head. One other feature concerning my problem is that this must be done in a relatively narrow aisle, approximately 54 inches.

2. I am also interested in locating the manufacturer who fabricates inexpensive, expendable reels, upon which hose of many sizes may be wound. The reel must be of the general dimensions: 26 inch diameter, O. D.; core 12-16 inches; and widths from 12-24 inches.

J. Zeitlin

Industrial Products Engineering  
Co.

*The first query offers no severe problem, FLOW having asked a number of manufacturers of drum handling equipment to get in touch with reader Zeitlin. But we're still investigating the second.*

*FLOW will be happy to pass along to Mr. Zeitlin any suggestions on either query that may be offered.*

**Grabs for Glass**

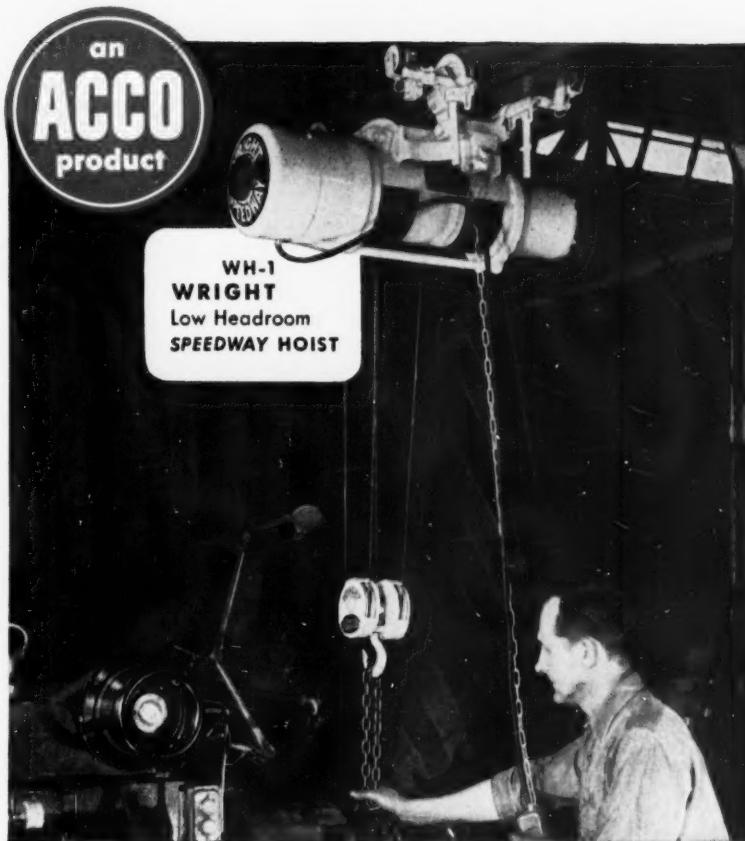
To FLOW:

Could you let us have some information on the handling of glass sheets mentioned on page 86 (FLOW, July, 1952) under the heading, "Large Sheets of Glass"?

This subject is of great interest to us, and we would be very grateful if you could grant us this request.

Union Des Verrieres Mecaniques Belges, S. A.  
Charleroi, Belgium

*Names of a number of firms which manufacture grabs have been sent to our friend in Belgium, but if anyone has any more ideas that might help them, we'll be glad to forward them too.*



## **Is Hoist Headroom a Headache for You?**

• Look at this. The bearing point of the hook of this WH-1 Low Headroom WRIGHT Speedway Hoist can be raised so it is only 12½ inches below the beam. And this is a 1-ton hoist with the five key features that make WRIGHT Speedways last longer and require less servicing.

This hoist has heat-treated and surface-hardened alloy steel gears, hard alloy silver electrical contacts in controller, heavy duty crane type safety limit stop, automatic multiple disc load brake, and ball bearing gear shafts.

Add to this grooved cable drums, improved plow steel preformed cable, concealed motor wiring, completely enclosed and ventilated weatherproofed housing, etc., and you'll have a combination of features found only in the WRIGHT Speedway Hoist.

Best of all—WRIGHT Speedways are priced no higher than ordinary hoists. In the long run they'll cost you less. So see your WRIGHT Hoist distributor today for full information or write our York, Pa., office.

**ACCO**



**WRIGHT HOIST DIVISION  
AMERICAN CHAIN & CABLE**

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York,  
Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

**WRIGHT**  
**Hoists  
Trolleys  
Cranes**

Circle No. 5 on Reader Service Card for more information

*At this world-famous shipyard . . .*

# "We specify we need the



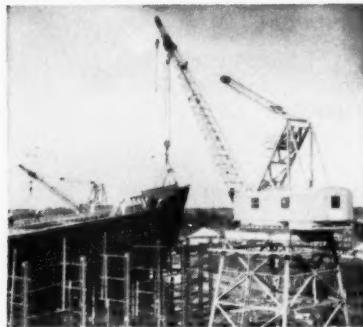
• Maintenance and inspection of rope, grooves, and sheaves is a daily routine at Ingalls. This company keeps all of its equipment in top notch condition, remachines worn grooves before they can damage a rope, lubricates all rope regularly. This extra care assures top performance and service life from Tiger Brand Rope.

• Over 65,000 ft. of rope are used on the hoisting equipment at this big shipyard. Ingalls Shipbuilding Corporation likes Tiger Brand Wire Rope because it gives excellent service and assures maximum safety.

• Tiger Brand Hoisting Rope has the extra reserve strength, flexibility, and fatigue resistance needed on the 12 bridge cranes at Pascagoula.



# Tiger Brand because best wire rope we can get!"



• If a rope broke on this crane, the boom would snap back and topple the whole machine over. And it's 80 feet to the ground. Ingalls prevents accidents like this by specifying dependable Tiger Brand Wire Ropes for hoisting machines and for safety lines around the scaffolding used to build a ship's hull.

• The lives of 150 workmen, as well as millions of dollars worth of equipment, depend on the strength and durability of wire ropes at this shipyard. In addition to hoisting, Ingalls Shipbuilding Corporation uses Tiger Brand Wire Rope to secure ships to the outfitting docks, to tie off sections of a ship until it can be fitted and welded, and for guys, rigging, and cargo falls aboard ship.



AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO  
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

**U·S·S AMERICAN TIGER BRAND WIRE ROPE**  
*Excellay Preformed*



UNITED STATES STEEL

Circle No. 14 on Reader Service Card for more information

The Right Wire Rope  
will do the trick!



the best we can get. It would be unthinkable even to consider a cheaper rope!"

Safety is all important at this yard. As Mr. C. A. Guynn, Master Mechanic, told us, "If one of these ropes should break, 50 tons of steel would drop! It would endanger over 150 workmen and do untold damage to a \$10,000,000 ship. And then there'd be the tremendous expense of an idle machine, and the cost of replacing the rope. We just can't take a chance with safety."

"That's why we always specify a first grade rope like Tiger Brand—

**SEND FOR FREE BOOKLET.** You can get exceptional service on any job from the right Tiger Brand Wire Rope. Its construction, grade, and the tough open-heart steel from which it is made, provide the special properties you need.

Make sure of getting the right Tiger Brand Rope by following the recommendations in our guide book, "The Right Rope for the Job." It lists the best rope for hundreds of typical applications. Send the coupon now for your free copy.

American Steel & Wire, Rockefeller Building, Cleveland 13, Ohio.

Please send me, without obligation, a copy of your helpful wire rope recommendation book, "The Right Rope for the Job."

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_



# Faster... Safer... AIR HOIST

Lift 1000 lb. loads faster...safer...and quieter...with ARO Air Hoists! Bettered all safety requirements...motor explosion-proof. Small, compact, overall length 10 1/4" ... weighs only 28 1/2 lb. Vane-type motor, totally enclosed.

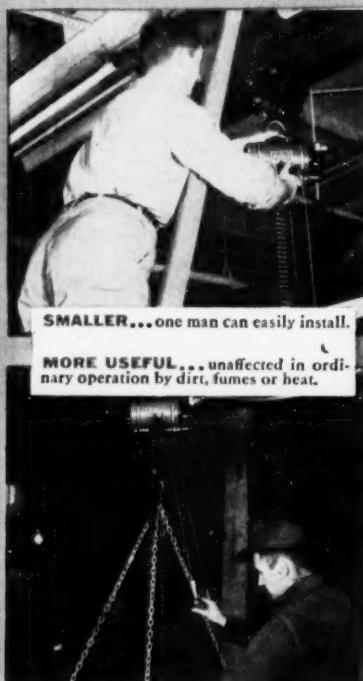
Saves time and labor for shipping docks...heat treating departments...refineries, chemical plants and plating departments...machine shops and foundries...appliance, furniture, textile, automobile and aircraft assembly lines...stock rooms.

**SEE YOUR ARO DISTRIBUTOR**



**FASTER**...wide speed range. Quieter, too.

**SAFER**...no spark hazard...safety construction throughout.



**SMALLER**...one man can easily install.

**MORE USEFUL**...unaffected in ordinary operation by dirt, fumes or heat.

**THE ARO EQUIPMENT CORP.**  
**BRYAN, OHIO**  
Offices in All Principal Cities  
In Canada—Aro Equipment of Canada, Ltd.  
Toronto, Ont.

**ARO**

**AIR HOIST**  
Also...Air Tools...  
Lubricating Equipment...  
Aircraft  
Products...Grease Fittings

**THE ARO EQUIPMENT CORP., BRYAN, OHIO**  
Please send full details on the new ARO Air Hoist, without obligation.

Name \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

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#### ... at Frank G. Hough Co.

Announcement has been made of the recent appointment of **Madison L. Crawford** as advertising manager. He comes to Hough with an extensive background in sales, advertising and material handling. For the past six years he has been associate advertising manager at Clark Equipment Co. and prior to that was with General Foods Corp. He also is the author of the material handling section of the first edition of the American Society of Tool Engineers' Handbook and has done considerable research work on material handling methods.



#### ... at Electric Storage Battery Co.

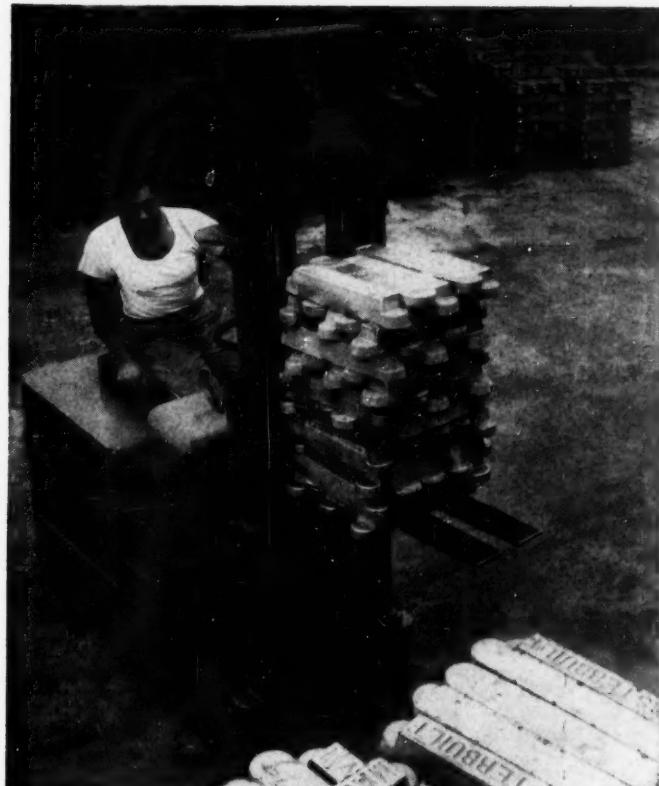
**G. E. Hayden**, sales engineer, recently became a member of the Exide Quarter Century club upon completing 25 years service with the company. He joined the firm in 1928 as an engineer. At special ceremonies conducted at the New York branch office, he was awarded an engraved gold watch in recognition of his service.

#### ... at Nutting Truck & Caster Co.

The election of two executive vice presidents were announced recently. They are **Guerdon S. Allen** and **Stewart S. Shaft**,

# B.F. Goodrich

## FREE TIRE AND WHEEL ANALYSIS can cut your tire maintenance costs 20% or more



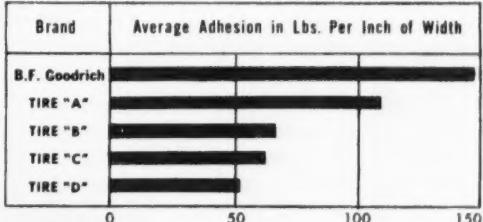
Tire maintenance costs cut 20%. Total tire costs lowered as much as 50%. Such savings have been reported by industrial tire users across the country through the use of the B. F. Goodrich Tire and Wheel Analysis Plan! Contact your local BFG retailer or mail the coupon below. Without cost or obligation, a trained B. F. Goodrich man will study your materials handling operations. He will tell you what type and size tires, what tread design and compound will serve you best.

The advice and counsel you get will be unbiased, for B. F. Goodrich makes a complete line of industrial tires. A special TW Analysis is available for manufacturers of industrial hauling equipment.

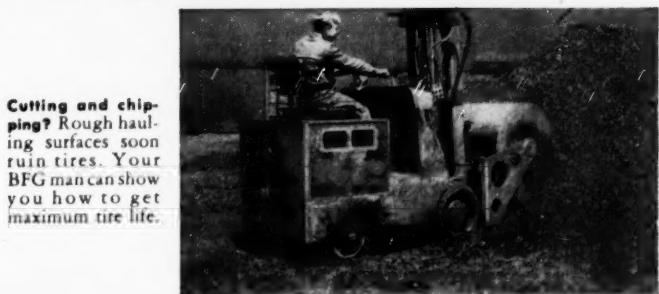


**DO YOU HAVE THIS PROBLEM?** Poor adhesion of rubber to steel caused this tire to fail prematurely. The chart below, based on extensive comparison tests of leading makes of tires, proves the superior adhesion qualities of BFG solid industrial tires.

### Tests Prove B. F. Goodrich Adhesion Best



**Heavy loads and equipment?** Overloaded tires fail prematurely. Let BFG show you how to match tire and load.



**Cutting and chipping?** Rough hauling surfaces soon ruin tires. Your BFG man can show you how to get maximum tire life.



The B. F. Goodrich Company  
Tire & Equipment Division  
Department TW-335,  
Akron 18, Ohio

Please send me:  
 Additional information on your Tire and Wheel Analysis Plan  
 Free copy of "Industrial Tire Guidebook"  
 Free copy of "How to Get Extra Service out of Solid Industrial Tires"  
Name \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Specify  
B.F. Goodrich  
tires  
when  
ordering  
new  
equipment

Continued

who also hold the posts of secretary and treasurer, respectively. Election to these new posts place active management of the company in their hands.

. . . at Atlas Plywood Corp.

**E. I. MacPhie**, president, has announced the appointment of **Donald R. Wall** as advertising

manager and director of publicity. Wall formerly was assistant advertising manager of Bostitch, Inc.

. . . at Westinghouse Electric Corp.

**Walker G. White**, an executive of the elevator division, who has contributed much to

the elevator and electric stairway development, has been awarded the company's highest honor—the Westinghouse Order of Merit. White joined the company in 1922 and currently is in charge of sales of elevators and electric stairs as well as for their installation throughout the country. The award was presented by **W. W. Sproul Jr.**, vice president of general industrial products.

. . . at Morningstar, Nicol, Inc.

**Earl C. Lenz**, formerly vice president and general sales manager of Paisley Products, Inc., subsidiary of Morningstar, Nicol, Inc., has been elected vice president of sales and advertising for the parent company and all subsidiaries. **George J. Muller**, president, made the announcement.

. . . at Ready-Power Co.

**Harold D. Gumpfer**, president, has announced the appointment of **Reuben W. Pelto** as sales manager. One of the company's earliest employees, Pelto has served in numerous service and sales capacities in the last 25 years.

. . . at Minnesota Mining & Mfg. Co.

The promotion of **John W. Pearson** to executive engineer in charge of engineering research and development was announced recently. Pearson joined 3M as a chemical engineer in the tape laboratory in 1939. In his new post he will be in charge of engineering for staff laboratories, tape developments, chemical engineering, machine development and instruments control.

. . . at Motorola Inc.

**Daniel E. Noble**, vice president in charge of the communications and electronics division, recently announced the appointment of **John P. Tansey** to the position of national service manager of that division. Tansey succeeds **Fred Schnell** who has been designated staff

For most efficient  
DOCK OPERATION

Specify  
**RITE-HITE®** ADJUSTABLE  
LOADING RAMPS

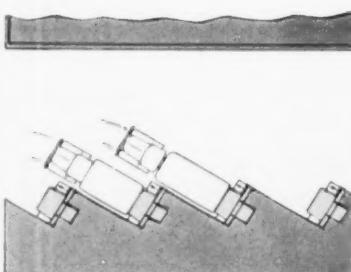
Rite-Hite makes it possible for you to utilize available dock area to best advantage. Rite-Hite insures parking of trucks in an orderly, space-saving manner. Loading and unloading is speeded, efficiency of dock operations is increased, costs are reduced.

A permanent part of the dock, Rite-Hite is maintenance-free, works on a simple but unique counterbalance principle, will give trouble-free service year after year.

Installation in new construction adds practically nothing to the cost of the building. In existing construction, installation costs are modest.

Rite-Hite offers 5 models in capacities of 10,000 and 20,000 pounds. Priced from \$395 to \$995.

It will pay you to investigate Rite-Hite Loading Ramps for your loading dock operations.



Rite-Hite Loading Ramps installed in a dock at an acute angle to provide safe, efficient material handling in a limited area.

Send for this  
EIGHT-PAGE  
BULLETIN,  
TODAY.  
Dept. F-24



**RITE-HITE®**  
DIVISION  
**LOOMIS MACHINE COMPANY**  
**FOURTH AND PINE STS., CLARE, MICHIGAN**

Circle No. 84 on Reader Service Card for more information



**DIGS TRENCHES** With Trench Hoe attachment, the HD-5G digs a flat-bottom ditch 27 in. wide and to a depth of 8 ft. Ideal for laying pipe, digging foundation footings, other vertical excavations.

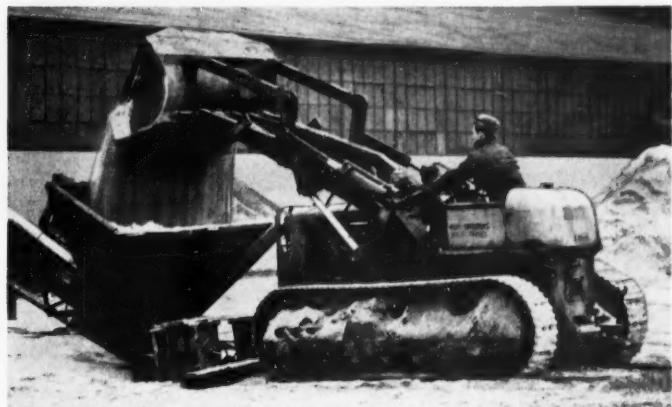


**SKIDS, LOADS, STACKS SOLIDS** Lift Fork attachment handles steel beams, pipe, lumber, packaged or palletized loads up to 4,000 lb. Works easily in unpaved yards where rubber-tired equipment bogs down.

OTHER attachments include Narrow Bucket, Rock Bucket, Rock Fork, Tine Fork, Crane Hook and Drag Bucket. Attachments may be interchanged in about 20 minutes by simply removing and replacing four pins. Ask your Allis-Chalmers dealer to show you how the versatile HD-5G can increase efficiency in and around your plant.

## New Materials-Handling Technique Features Tractor Shovel with Quick-Change Front End

Equipment flexibility is an important answer to high production costs. This accounts for the popularity of the thousands of Allis-Chalmers HD-5G Tractor Shovels now in use in plants of all kinds. The 40-hp. crawler, with its wide range of front-end attachments, digs, carries, dumps, stockpiles, spreads or loads materials of all kinds. Its power and versatility enable it to replace a fleet of part-time specialists . . . to pay its way *full time* both in and around the plant.



**HANDLES SAND, CLAY — ANY BULK** With standard 1-yd. bucket, the HD-5G loads trucks, feeds hoppers and conveyors, builds stock-

piles. Crawler tracks stand up in cullet and other abrasive material as only steel can.



**SPEEDS YARD MAINTENANCE AND NEW CONSTRUCTION** Bulldozer or Angledozer blades quickly clear or level land for new construction, backfill trenches and foundations, maintain unpaved yard roads.

**CLEAR'S SNOW** Big 2-yd. Light Materials Bucket quickly cleans up and loads snow from yard roads and parking lots. Also doubles output in coal, coke, cinders and other light materials.

**ALLIS-CHALMERS**  
TRACTOR DIVISION • MILWAUKEE I, U.S.A.

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# NEW RAYMOND CATALOG

Looking for ways to . . .

Increase  
Output

CUT  
COSTS

Simplify  
Handling

SAVE MANPOWER



Then this new RAYMOND catalog is for you . . .

In it, you'll find 24 pages packed with hydraulic equipment that can improve plant efficiency. You'll discover new ways to move materials . . . and to handle them at the machine.

Be sure you have a copy of this RAYMOND Catalog before investing in additional handling equipment. Simply fill in and mail the coupon . . . no charge, no obligation.



ELECTRIC INDUSTRIAL TRUCKS  
HYDRAULIC ELEVATING EQUIPMENT

## The RAYMOND CORPORATION

3325 Madison St., Greene, N.Y.

Please send me your new RAYMOND Hydraulic Equipment Catalog.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

MAIL  
THIS COUPON

Circle No. 114 on Reader Service Card for more information

assistant to the vice president. Tansey formerly was service contract manager.

### . . . at Goodyear Tire & Rubber Co.

Key appointments on the management level have been announced by **E. J. Thomas**, company president. **Sam DuPree** has been made general manager of all industrial products and **Herman R. Thies** has been named general manager of all chemical products. Both are newly created positions. DuPree has been with the company since 1934 and for the past year has been assistant to sales vice president **R. S. Wilson**. Thies has been manager of the chemical division since its organization in 1948.

### . . . at Electric Storage Battery Co.

The promotion of three executives was announced recently by **Roland Whitehurst**, vice president and manager of the industrial products division. **C. J. Moore**, former manager of railway and motive power sales, has been made industrial products sales manager. **W. E. Nyce** has been named manufacturing manager, and **L. E. Wells**, former chief engineer, has been made director of research and engineering.

### . . . at Minnesota Mining & Mfg. Co.

The promotion of **John J. Jungbauer** to director of tape development engineering was announced recently. He joined 3M as a project engineer in 1945 and had been assistant director for the past two years.

### . . . at Container Laboratories Inc.

**Charles J. Zusi**, president, has announced the appointment of **Gordon S. Mustin** to the firm's engineering office in Washington D. C. Mustin formerly had been in charge of package engineering with the Navy's bureau of Aeronautics.

(Continued on page 135)



## **LASTING POWER for Handling . . . THANKS TO BATTERY POWER!**

For the higher lifts and faster maneuvering required in today's handling operations, industrial trucks are a lot more rugged than they used to be. Batteries to power them are more rugged, too. Their increased capacity gives them lasting power to work longer, with greater reliability and at lower cost than with any other type of power. Only with battery power do you get the complete dependability, flexibility and adaptability to meet modern handling needs. There's no power like battery power. There's no battery power like *Gould* power!



Specify  
THE GOULD "THIRTY"  
with New Diamond "Z" Grids—  
America's Finest  
Industrial Truck Battery

# **GOULD INDUSTRIAL BATTERIES**

**GOULD-NATIONAL BATTERIES, INC., TRENTON 7, N. J.**

Always Use Gould-National Automobile and Truck Batteries

Circle No. 65 on Reader Service Card for more information

©1953 Gould-National Batteries, Inc.

# NEWS VIEWS TRENDS

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## HINDE & DAUCH TO BUILD

**Hinde & Dauch Paper Co.** has acquired a 17-acre site at Kansas City where a new factory will be constructed for the manufacture of corrugated and solid fibre shipping boxes. According to Charles E. Frohman, president of the company the date for commencing construction has not been decided as yet. Detailed plans will be announced at a later date. The company has been operating a factory in Kansas City since 1926, and presently employs a total of 203 persons at that plant.

## WESTINGHOUSE CARRIES AUTOMATION TO INDUSTRY

The Westinghouse "automation" display coach has been viewed by nearly 3,500 engineers, maintenance people, and plant executives in the southwest and the Pacific Coast areas. Currently in the Midwest, the coach will subsequently tour to a total of 350 plants in all parts of the U.S. A mobile combination of the best features of an auditorium and exhibit hall, the coach shows how common electrical devices such as line-starters, control stations, motors, and circuit breakers can be used to achieve successful automation.

## TOMOTOR ADDS PRODUCTION AND DISTRIBUTION FOR EUROPE

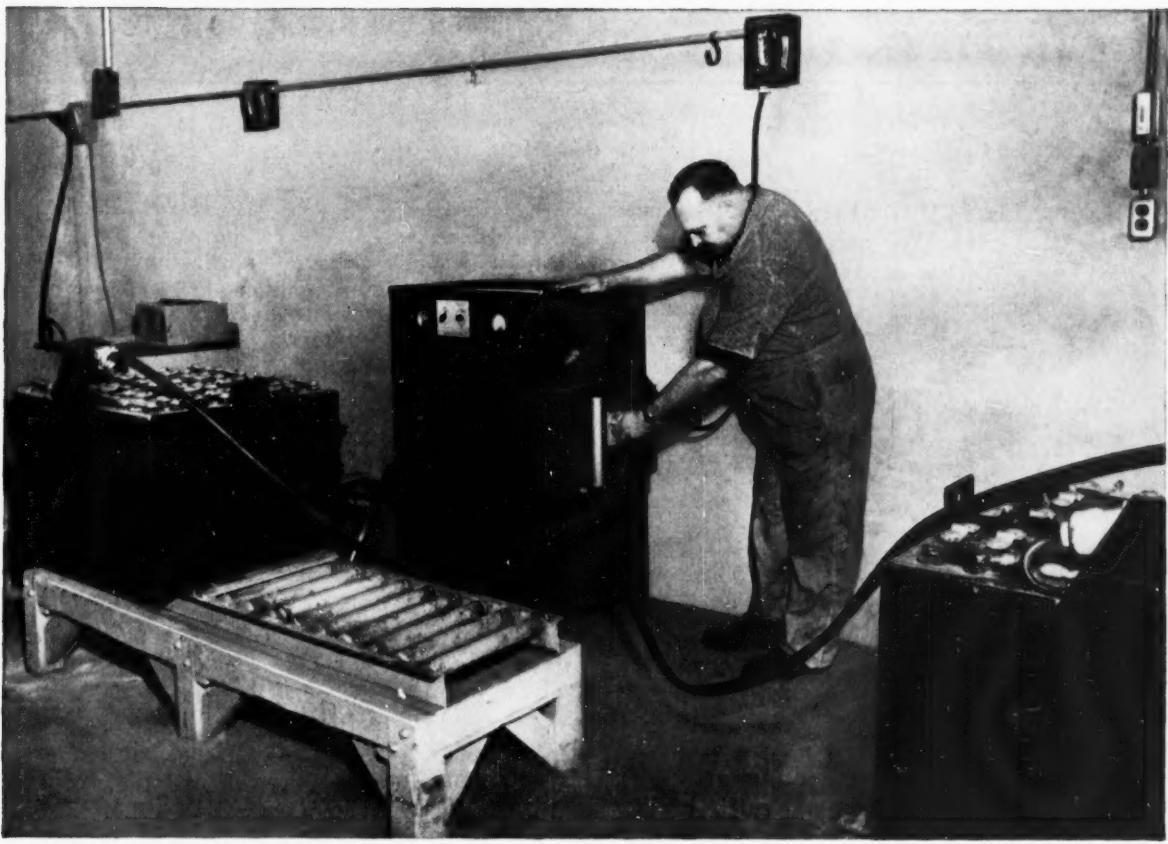
**Towmotor Corp.**, manufacturer of fork lift trucks and industrial tractors has signed a contract with Brodrene Vestergaard of Copenhagen, Denmark, which will give it production and distribution facilities in the Scandinavian countries and continental Europe. The Vestergaard organization, which was represented in the negotiations by Svend Vestergaard is a distributor of industrial supplies in Europe.

## GENERAL GUMMED PRODUCTS BUILDS

**General Gummed Products, Inc.**, Richmond Hill, N.Y., manufacturers of gummed standard and specialty tapes for the industrial and retail trade has announced that its expanding activities have necessitated construction of a new plant. Work has started on a single story building on a large tract in Linden, N.J. It will have its own railroad siding and will be convenient to both the eastern metropolitan centers as well as on the main transportation hubs to the south and west.

## MAGCOA EXPANDS

**Purchase of the Tobey Manufacturing Corp.**, El Segundo, Calif., by the Magnesium Company of America, has been revealed by Miles L. Abel, executive vice president of MAGCOA. Mr. Abel disclosed an increase in business of 32 percent over 1953 and said the additional facilities and specialized aluminum products of the Tobey Corporation should make an even greater increase possible this year. Plant will be known as Tobey Aluminum Division of MAGCOA.



TWO TRUCK BATTERIES ARE CHARGED AT SAME TIME USING G-E SEQUENCE CHARGE CONTROL AT BEECH-NUT PACKING COMPANY.

## G-E Charger with Sequence Charge Control cuts costs; charges two batteries at once



MORE WORKING TIME for fork trucks like this one moving Beech-Nut baby food, when truck batteries are charged two at a time in working area.

"For our driver-ride lift trucks, I have proved that there is no finer equipment than G-E Metallic Rectifier Chargers," reports L. M. Spraker, Materials Handling Engineer, Beech-Nut Packing Co., Canajoharie, N. Y., "and I double the capacity of G-E Chargers with G-E Sequence Charge Control."

**SAVES TIME, SPACE.** You can charge two batteries at a time, and save valuable floor space as well, with G-E Sequence Charge Control. A competent electrician can attach it to any G-E Metallic Rectifier Truck Charger.

**EASY TO INSTALL.** Your trucks' power-consuming time is more productive when you install G-E Chargers right in your working areas. Installation is simple. No special foundations are needed.

**LONG LASTING.** Safety features prevent damage to charger and battery in case of power failure. G-E battery chargers last for years with virtually no maintenance.

**FOR INFORMATION,** see your nearest industrial truck representative, or write Section 463-8, General Electric Co., Schenectady 5, New York.

*You can put your confidence in—*

**GENERAL ELECTRIC**

Circle No. 148 on Reader Service Card for more information

## NEWS, VIEWS, TRENDS

*Continued*

### **ALLIS-CHALMERS TO ENLARGE TERRE HAUTE FACILITIES**

**Plans to expand** their manufacturing facilities in Terre Haute, Indiana, by an additional 84,000 sq. ft. have been disclosed by W. A. Roberts, president of Allis-Chalmers Manufacturing Co. The addition will involve an expenditure of \$4,250,000, and be used for the manufacture of component parts for transformers, switchgear and circuit breakers. Production in the new plant is scheduled for late 1954.

### **BRITISH J. B. WEBB FORMED**

**Jervis B. Webb Co., Detroit**, has announced the formation of Jervis B. Webb, Ltd., Bexley Kent, England. Officers and directors of the new firms are: P. L. Stonard, General Manager; E. W. McCaul, Chairman; J. C. Webb, managing director; W. Morrison, secretary. The British company will enable foreign firms or American firms with branches abroad to purchase Webb designed and engineered material handling systems with sterling instead of dollars. Control of specifications and standards will continue to be exercised at Webb's Engineering Department in Detroit.

### **YALE & TOWNE CONDUCTS SERVICE SCHOOL**

**Customers from as far away as Tokyo, Japan** were included in a group participating in a customer's service school conducted by Yale Material Handling Division, The Yale & Towne Mfg. Co. In separate five-day sessions, two groups of customers were trained in preventive maintenance and service of Yale hydraulic gas and diesel trucks, hydraulic electric trucks, Warehouser electric trucks and Worksaver electric trucks. In addition to work with units made available for the course, blackboard talks with cut-away models and many drawings helped the students to reach a thorough understanding of the equipment.

### **EVANS COMPLETES 50-CAR ORDER**

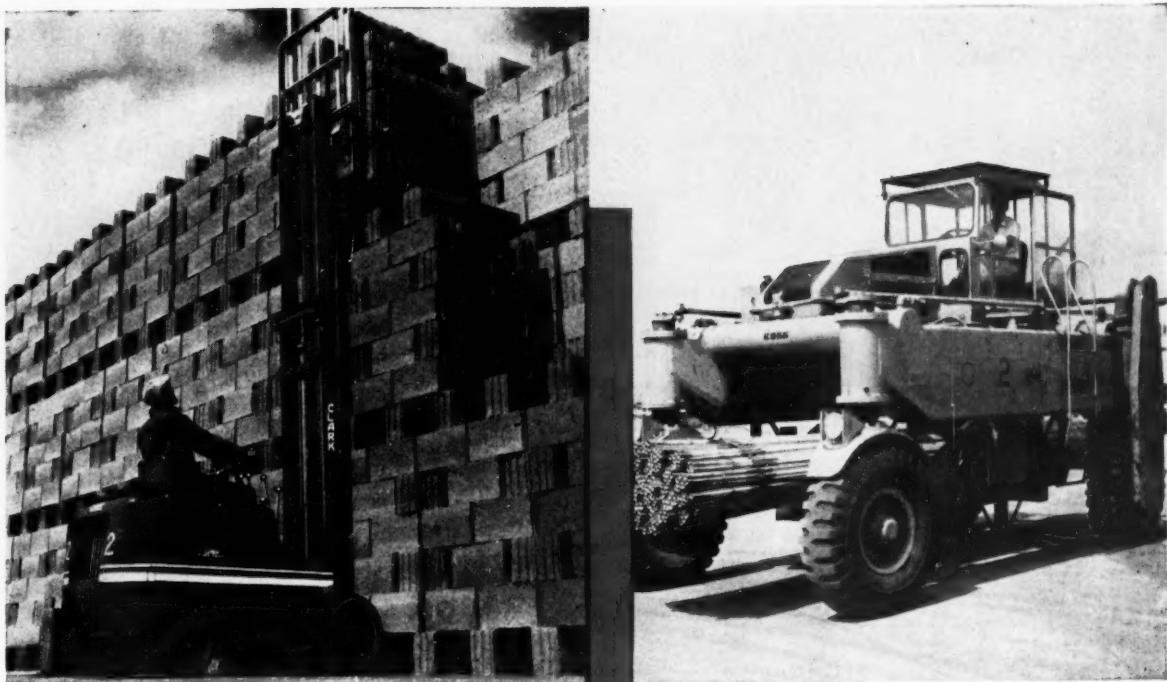
**Fifty Southern Pacific Lines box cars**, equipped with Evans DF Loaders at the Evans Products Co. plant have been delivered for active line service. Completion of the order brings to 369 the number of SP cars carrying the Evans load-locking, load-secur ing device and raises the total number of DF Loader-Equipped box cars owned by the nation's Class I railroads, armed services and private industry to 8,757.

### **S.I.P.M.H.E. SHOW DATE SET**

**The 1954 ninth Annual Industrial Packaging and Material Handling Exposition, Competition and Short Course** will be held at the Coliseum in Chicago. Dates for the exposition and competition are Sept. 28, 29 and 30, and the short course is scheduled for Sept. 27, 28, 29 and 30.

### **EFFICIENCY FEATURED AT NEW HOFFMAN PLANT**

**A new plant, built for the manufacturing operations** of the Hoffman Co., York, Pa., has twice the floor area of former operations, yet, through more efficient planning and practices will permit more than triple out-put of the company's metal baskets, trucks, racks and other material handling equipment. The new plant was completed in less than a year from the time of its conception.



## **NO CAPITAL INVESTMENT for your material handling costs when you use CLARK'S PAY-AS-YOU-GO LEASE PLAN**

Without tying up a penny of working capital, put Clark material handling equipment to work for you. With Clark's pay-as-you-go plan, any of Clark's many models and types of handling equipment is available for your immediate use. With no down payment and at a low monthly cost, this lease plan enables you to:

1. Conserve working capital for other essential needs—such as additional inventory, plant expansion and non-leaseable capital equipment
2. Pay-as-you-go rental is a totally deductible expense

3. Eliminate trade-in problems and get the benefit of newest equipment.

No outside financing is necessary—you deal directly with your local Clark dealer who will help you determine what equipment best fits your needs. Gas or electric fork trucks, Powr-worker hand trucks, tractors and Clark-Ross carriers—all are available on a 3 or 5 year lease.

Let Clark equipment pay for itself as it cuts your handling costs. Call your local Clark dealer for a discussion of the details which will not obligate you in any way.

**SEE THE YELLOW PAGES OF YOUR  
PHONE BOOK FOR THE NAME  
OF YOUR LOCAL CLARK DEALER**

**CLARK  
EQUIPMENT**

Industrial Truck Division  
**CLARK EQUIPMENT COMPANY**  
Battle Creek 13, Michigan

Circle No. 34 on Reader Service Card for more information  
**FLOW • FEBRUARY, 1954**



### **On processing — inspecting — packing lines with roller and belt conveyors**

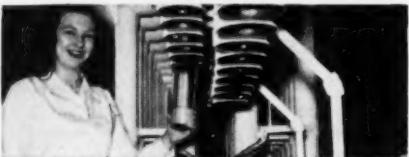
• Your needs in conveyors—ranging from power and gravity conveyors, roller, belt, slat, chain, pushbar, sectional—to portable, self-contained units—spiral chutes—pneumatic tube systems—can be best met at Standard with an experience record of more than 45 years at your service. Write—address Dept. FL-24.



### **In storage — shipping receiving depts. with a HANDBELT**

• Conveys horizontally or at any decline and incline angle within its range. Easy to wheel about or adjust—fits in crowded aisles, cars, freight elevators. Handles commodities up to 135 lbs. Can be placed in series to form a complete conveyor line. Available in 3 sizes and belt widths. Write for Bulletin No. 63-D—address Dept. FL-24.

### **For interdepartment communications and dispatch . . . pneumatic tube systems**



• Provide swift, sure, safe transportation of messages, documents, blueprints, samples, small parts, money: cylindrical or oval tubes 1½ inch upward with dispatching and receiving terminals for complete systems to meet your needs. Write for special Bulletin SPT11—address Dept. FL-24.

#### **STANDARD CONVEYOR COMPANY**

General Offices: North St. Paul 9, Minnesota  
Sales and Service in Principal Cities

Write Dept. FL-24, for  
Standard's general catalog — tell us what you  
want to convey.



**Standard**  
GRAVITY & POWER  
CONVEYORS

ROLLER • BELT • SLAT • CHAIN • WHEEL  
PUSH-BAR • SECTIONAL  
  
PORTABLE CONVEYOR UNITS:  
HANDBELT • HANDIPILER  
INCLINEBELT • LEVEL BELT • EXTENDOVEYOR  
UTILITY BELT-VEYOR • HANDI-DRIVE  
VERTICAL LIFTS • PNEUMATIC TUBE SYSTEMS

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The American Monorail Co. has appointed the Midvale Material Handling Equipment Co. as its distributor in the St. Louis area. The territory includes the eastern half of Missouri and the southwestern counties of Illinois. The company recently moved into new quarters at 5011 Manchester Ave. in St. Louis. **Travis W. Winter**, formerly at the Detroit division office of American Monorail, will handle the company's products at Midvale. **Webb L. Kammerer** is president of the distributorship.

Industrial Trucks, Inc., of Fairfield and Rocky Hill, Conn., has been appointed by Yale & Towne Mfg. Co. to handle sales and services of its industrial truck lines in that area. **James H. W. Conklin**, Yale's general sales manager, announced that the firm's territory would include a large portion of the lower New England States. **Alex Weisker** is president of the distributorship and other officers include **Robert H. Helm** and **F. W. Piper**, vice presidents; **John L. Richardson**, secretary, and **Raymond L. French Jr.**, treasurer.

Uhrden Inc. has opened a factory sales and service branch at 18509 James Couzens Highway, Detroit, for its line of Tubar hand trucks and lifts. **Chester L. Jackson** is manager of the branch.

Hamerslag Equipment Co. has been appointed to handle

# Save \$400<sup>00</sup>\*

**UP TO**

## PER TRUCK—PER YEAR

# BUDA

## outmodes

all other fork lift trucks

\*This is the type of outstanding savings you get with  
**BUDA**  
**Diesel**  
**POWER**

The economy story on the new Buda FT Series is truly amazing. Never before has there been a truck with such *proved* savings... savings that go on year after year. Take Buda fuel consumption for example... it's way, way down, with no sacrifice to power—either Diesel or gasoline. Then there's the functional design that makes maintenance a breeze, not a time-consuming chore. Next on the list is Buda's terrific 85% parts interchangeability that keeps stock inventory at absolute rock bottom. And another thing... Buda builds the FT so that parts last longer—need little or no attention. Think it over, then look it over. Be sure and compare Buda before you buy. Thirty-six models to choose from—18 Diesel and 18 gasoline.



### Get This Facts Book

Proves Buda is the safest, most maneuverable, most economical, the easiest to maintain fork truck in the field. Write today for your free copy!



# BUDA

The Buda Company, Harvey, Illinois  
 Division of Allis-Chalmers Manufacturing Company  
 Diesel and Gasoline Engines, Lifting Jacks, Railroad Equipment,  
 Earth Drills, Materials Handling Equipment



Chore Boys



Industrial Tractors

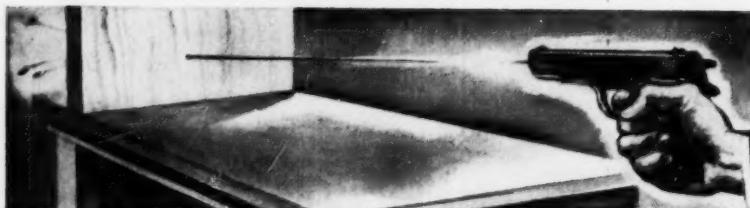


Fork Lift Trucks

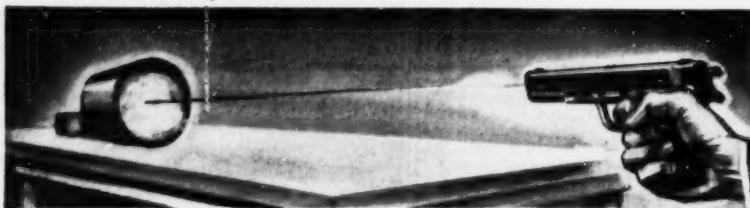
The Line With ALL3 For Diversified Handling

Circle No. 26 on Reader Service Card for more information

# MAKE THIS SIMPLE TEST!



From five feet away, fire a .45 cal. automatic pistol at a 3" thick pine plank. Bullet easily passes through plank because of plank's rigid resistance to impact.



From five feet away, fire a .45 cal. automatic pistol at 1 lb. of ordinary absorbent COTTON placed in a bucket. Bullet cannot pierce cotton because the cotton absorbs the impact similar to our solid woven COTTON Conveyor Belts.

. . . and you'll know why it's smart to buy  
**BUFFALO Conveyor BELTS**



MADE OF SOLID WOVEN COTTON, these are the belts with the "built-in bounce". Our exclusive Wov-In-Wear process weaves the toughest of cotton yarns so that they have extra springiness. This woven-in resiliency permits these belts to take a beating day in and day out without showing the least sign of wear. Like the example above of the cotton and the bullet, Buffalo Belts absorb everyday impacts and wear factors and stand up for years of extra life. In addition, they "track" perfectly, are light weight and easier on motors, are cleaner, have no odors and are adaptable to almost any conveying job. First costs and upkeep are lower. Decide now to replace costlier, plied-up belts with longer lasting Buffalo Belts . . . and you can do it at a fraction of the cost.

**IN ADDITION TO REGULAR WOVEN BELT, BUFFALO OFFERS 6 SPECIAL TREATMENTS TO HANDLE PARTICULAR PROBLEMS, FOR INSTANCE:**



OVER  
200 SIZES  
35 WIDTHS  
7 THICKNESSES

## WATER

Buffalo's regular solid woven cotton conveyor belting has been rubber filled and covered to produce this water and wear resistant belt. This tough, long-lived, economical belt will track perfectly and wear longer for rugged jobs such as vegetable and fruit washing, sorting, etc.

## FREE

### 14 PAGE GUIDE TO

Buying the Right Conveyor Belt for your Particular Job. Illustrated Uses, Maintenance Tips, Sizes, Prices.



**BUFFALO**

WEAVING & BELTING COMPANY

209 CHANDLER STREET

NEW YORK PHILADELPHIA CHICAGO DETROIT LOS ANGELES

Circle No. 27 on Reader Service Card for more information

sales of all Mercury Mfg. Co. lines in northern California. With headquarters in San Francisco, the firm is headed by Jay P. Hamerslag Jr., Ogden Siever and Henry Wallraven. Mercury is the originator of the trackless train system of fork trucks and trailers.

Rotary Lift Co. has named the Rucker Company in Oakland, Calif., as its distributor of industrial lifts in Washington, Oregon, Idaho, Nevada and Arizona. The firm has specialized in the handling of hydraulic equipment for many years. C. E. Rucker is president and C. J. Woodard is sales manager. J. E. Allen, west coast division manager for Rotary Lift, made the appointment.

A factory branch sales office and warehouse has been opened in Detroit by the Ruger Equipment Co. W. H. Davis, president of Ruger, said the new branch would provide warehouse stock and factory service for the firm's floor crane customers in the eastern Michigan area. C. L. "Chet" Jackson has been named manager.

E. M. Abramson, president of the Ohio Equipment Co., has revealed the appointments of Howard A. Reinhart and Arthur Berger to his sales staff. Both men have broad experience in material handling sales and engineering service.

The James M. Cox Co. of Richmond, Va., has been appointed exclusive representatives for NesTier small parts containers, according to an announcement by Chas. Wm. Doepeke Mfg. Co., manufacturers of the NesTier line.

(Continued on page 106)



# *First Again!*

## Mobil-Matic MOBILIFT

**with OIL-SMOOTH Constant-Mesh Transmission  
Engineered Especially for FORK TRUCKS**

**First** with an Oil Immersed Multiple Disc Clutch especially designed for fork trucks.

**First** with Lev-R-Matic — No Gear Shift...No Clutch Pedal ...ONE-Lever Control.

**First** with FREE LIFT to give maximum lifting height before inner mast raises.



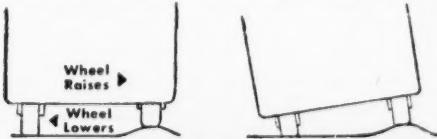
### **And Now... First Again with MOBIL-MATIC DRIVE**

The oil-smooth, high and low range, constant mesh transmission with fluid coupling to the Chrysler 6-cyl. engine. There's **NO CLUTCH PEDAL** — Just **ONE** direction selector lever.

### **First with HYDRA-LIZER**

The hydraulic equalizer on the steering wheels for cross-compensating truck over bumps...

**GIVES YOU THIS** ↓.....**NOT THIS** ↓



**MODEL D-424**  
4,000 lb. cap. at 24" Load Center. 83" Mast, 128" lift, 64" free lift.

**WRITE TODAY** for complete details on the New Mobil-Matic MOBILIFT or contact your nearest Lamson-Mobilift office.

**MOBILIFT**  
*Mobil-Matic*  
**FORK LIFT TRUCKS**

**LAMSON MOBILIFT CORPORATION**

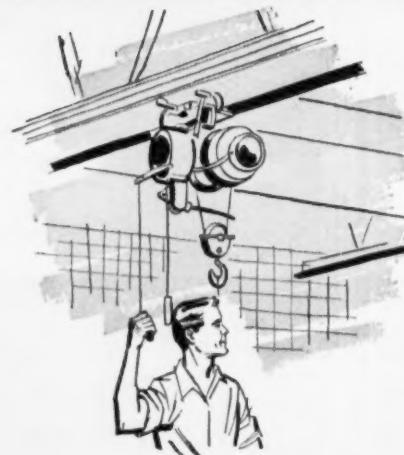
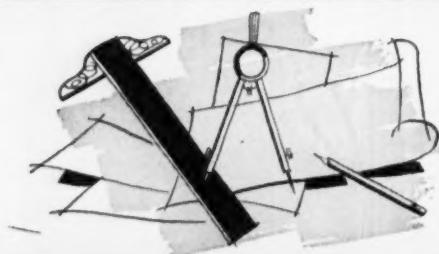
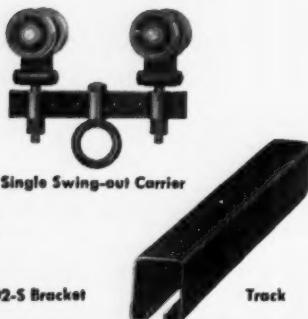
835 S. E. MAIN STREET • PORTLAND 14, OREGON

- 2317 W. 18th, CHICAGO
- 2724 TAYLOR ST., DALLAS
- 2730 SAN PABLO AVE., BERKELEY
- 790 PATTERSON AVE., E. Rutherford, N. J.
- 1113 SPRING ST., N.W., ATLANTA

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FLOW • FEBRUARY, 1954



# OVERHEAD CONVEYING EQUIPMENT



## 3 simple steps for easy installation

Here's how Coburn brings you the advantages of modern overhead conveying equipment—yet with minimum investment and installation costs.

**1.** Our engineers make a detailed study of your particular plant layout.

**2.** Complete, easy-to-follow plans based on your requirements and on our specialized engineering experience are submitted.

**3.** These plans plus Coburn's simplicity of design assure that your overhead conveying system can be set up quickly and economically—so simply in fact that your own plant personnel can make the installation, if you so desire.

Write for Catalog #220 to Coburn Sales and Engineering, 56 Sterling Street, Clinton, Mass.

THE COLORADO FUEL AND IRON CORPORATION—Denver and Oakland  
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago  
Detroit • New Orleans • New York • Philadelphia

**COBURN PRODUCTS**  
MANUFACTURERS OF OVERHEAD CONVEYING EQUIPMENT  
THE COLORADO FUEL AND IRON CORPORATION

[F]



## FAMOUS FOR FIRSTS

# Automatic...

America's finest line of industrial trucks

The name AUTOMATIC has long been a symbol of leadership in the Materials Handling field. Creative thinking and inventive engineering have produced a line of industrial trucks with exclusive features that assure top, money-saving performance...features that keep Automatic trucks years ahead of the times! No wonder Automatic is famous for "firsts"...for the newest and best developments in the industry.

Automatic has the years of know-how gained in building industrial trucks *since 1906*. Moreover, Automatic is the world's largest exclusive builder of electric-driven industrial trucks. From operator-led trucks to giant fork lifts, there's a wider range of Automatic trucks and attachments keyed to almost every materials handling need. For the truck that's exactly *right* for your application...and for years of dependable, low-cost, trouble-free service...you can count on Automatic.

You'll be surprised how easy it is to put an Automatic to work in your plant today—through Automatic's "Earn-Its-Own-Way" Plan\*. All Automatic trucks are covered by this new plan for financing and leasing equipment...so you can get your truck immediately and let it *earn* for you while you pay. Automatic has on file actual case histories of Automatic trucks *paying for themselves* in less than a year!

Under Automatic's Financing Plan, a sensible down payment delivers your Automatic truck. The balance is on deferred payment, from 6 to 36 months. *Whatever schedule is best for you!* The Leasing Plan provides for leases for 2 to 5 years, or 2 to 9 years, depending on type of equipment. The monthly costs are low, and a variety of lease options for renewals or for purchase are available on request.

\*This plan available in U.S.A. only.

# A<sup>®</sup> Automatic

WORLD'S LARGEST EXCLUSIVE BUILDER OF ELECTRIC-DRIVEN INDUSTRIAL TRUCKS

# A GREAT NEW Automatic F



## High Styling for the "New Look" Functional Design for the "New Performance"

The sensational new DYNAMOTIVE utilizes *entirely new* engineering design that permits the performance advantages of both gas and electric trucks. Its infinite step transmission gives the smoothest, most fully controlled flow of power available. Dynamotive does for users of materials handling equipment what modern diesel-electric power has done for American railroads. Its advanced new design insures a whole new concept of operation...with maximum economy, maximum efficiency!

DYNAMOTIVE handles like a fine automobile, pro-

vides its operator with unsurpassed convenience and safety. Its handy accessibility permits "split-second" servicing. DYNAMOTIVE has performed sensationaly in laboratory tests, and in actual on-the-job applications. You'll want to investigate its advantages...in terms of what they mean to your business in lower costs and smooth, efficient operations.

Capacities: 4000, 5000, and 6000 pounds. Height of telescoping lifts 125 inches, with standard 83" overall height for mono-lift or duo-lift models.

C FIRST . . . THE NEW

# DYNAMOTIVE

AMERICA'S FIRST GAS TRUCK WITH ELECTRIC TRANSMISSION



## FEATURES that mean quality unsurpassed . . .

DYNAMOTIVE also offers these additional Automatic industry-proved features: Silicone insulation for drive motor and generator. Heavy section rolled manganese alloy steel uprights • Ball bearing mounted carriage and upright rollers • Hydraulic safety fuses (with duo-lift).

Optional features include a new Automatic load indicator which shows weight of material on truck forks, prevents overloading; engine-hour meter; tail lights; two-way radio; water and catalytic mufflers; converters for propane and butane gas.

## An entirely new concept in fork lift operation

Here's what Automatic's electric transmission means to you: No clutch! No gears to shift! No hydraulic converter or over-drive mechanism! No engine shock due to clutching. No mechanical connection from engine to drive unit. Maximum comfort and ease of operation. Foot operated lift and tilt. Interlocked dual brake system for maximum safety. Electric truck reliability. Infinite acceleration range with minimum power loss. Engine speed automatically adjusts to load requirement. Low fuel consumption. Minimum engine wear—maximum life. Minimum down time. No aisle projections. Low chassis for greater stability. Greater vision. Centralized controls.



# A<sup>®</sup> Automatic

ER OF ELECTRIC-DRIVEN INDUSTRIAL TRUCKS

# ANOTHER Automatic FIRST!

**UNDERWRITERS' LABORATORIES APPROVAL  
FOR TYPES EX AND EE INDUSTRIAL TRUCKS**

**Type EX—For operation in hazardous locations**

**Type EE—For operation in semi-hazardous locations**

AUTOMATIC proudly announces UL Type EX approval for 2,000, 3,000 and 4,000 pound capacity models of HF Skylift electric trucks...the first time UL has given any industrial truck approval for use in hazardous locations involving fire and explosion! Thus, an electric fork truck is at last available fully acceptable for use in these areas.

In addition, Automatic has been given the UL Label of Approval for EE rated trucks, for operation in semi-hazardous locations. These Type EE trucks include Transporters, Transtackers, and Trantractors equipped with Type EE sparkproof and dustproof protection. *Automatic is the only manufacturer of operator-led trucks with Type EE Underwriters' Laboratories Approval!*

The UL's specifications for both Type EX and EE trucks are used by the National Fire Protection Association as the basis for insurance policies throughout the United States and these trucks therefore meet National Fire Protection Association requirements as well.

Clearly, if your materials handling operations involve hazardous or semi-hazardous locations, one of these Automatic industrial trucks is your answer.



**THERE'S A "KEYED-FOR-THE-JOB" AUTOMATIC TRUCK  
FOR ALMOST EVERY MATERIALS HANDLING NEED**

Automatic offers many more advanced-type industrial trucks, equipped with more ingenious devices for licking tough materials handling jobs! No matter what type of product or material is involved, whether it is light or heavy, there is an Automatic truck and attachment "tailored" to do the job with maximum efficiency and economy. *Don't delay* in getting full information on the complete Automatic line—and on the cost-cutting advantages it offers your business!

MAIL COUPON TODAY!

**Automatic** 141 West 87th St., Dept. B-4,  
Chicago 20, Illinois

Without obligation, please send me full information on:

- the "Earn-Its-Own-Way" Finance-Lease plan
- the sensational new Automatic DYNAMOTIVE
- Underwriters' Laboratories Approved Types EX and EE Industrial trucks
- Automatic's complete line of industrial trucks

Company Name.....

By..... Title.....

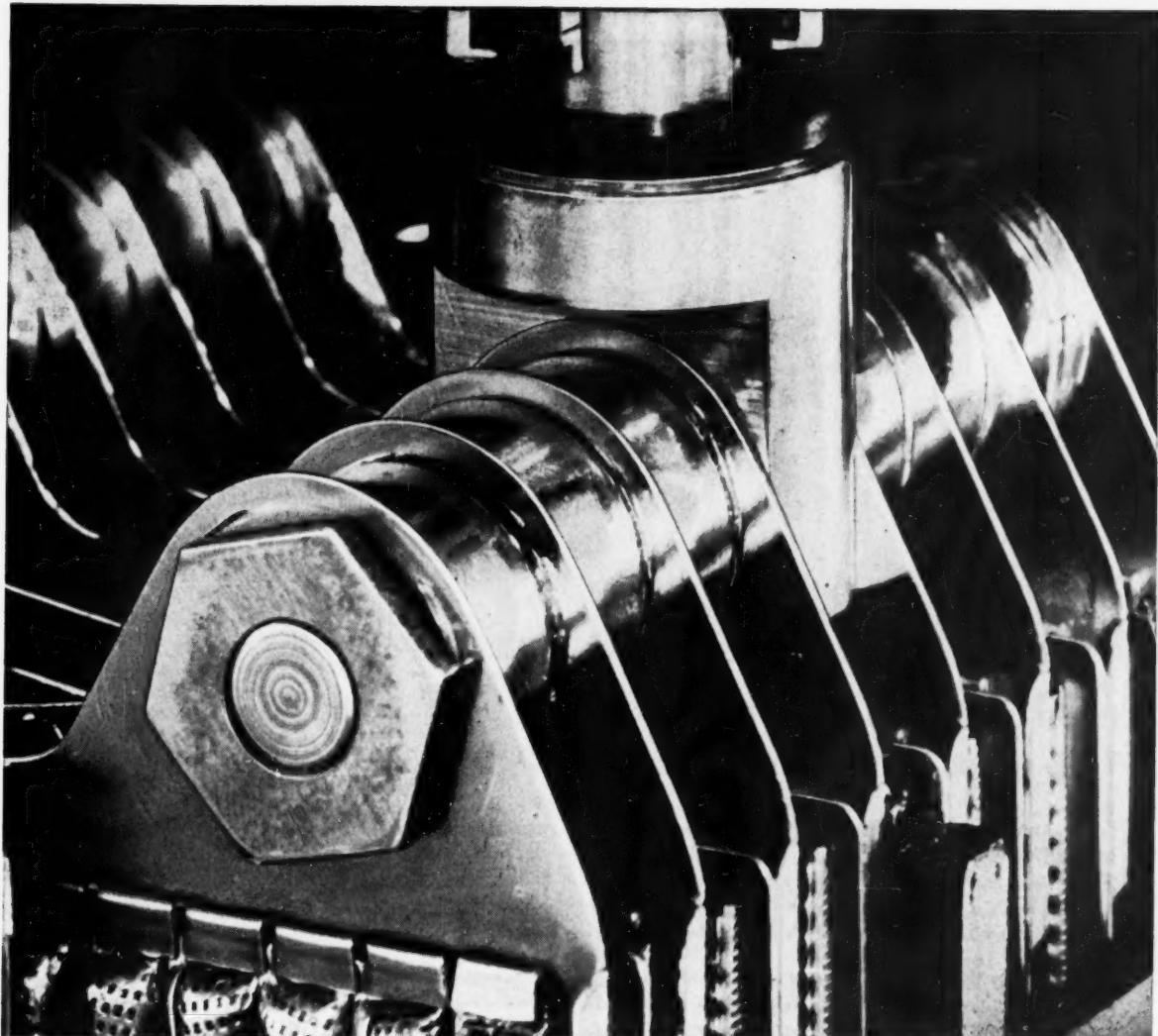
City..... Zone..... State.....

# Automatic®

**WORLD'S LARGEST EXCLUSIVE**

**BUILDER OF ELECTRIC-DRIVEN  
INDUSTRIAL TRUCKS**

LITHO IN U. S. A.



## The inside story on industrial truck battery costs

You are looking at the interior of one of America's most unusual batteries! It is unusual because the cells themselves are made of steel . . . not just the "steel tray" assemblies. Result: the strongest battery construction available for industrial truck use today.

Furthermore, the electrolyte used in EDISON batteries is alkaline—a natural preservative of steel. In daily use, these battery features mean that EDISONS are electrically fool-

proof—not harmed by such accidents as over-charging, short circuiting, etc. That's why, in hundreds of truck operations, EDISONS give *more than twice* the performance life of conventional batteries.

Such profitable EDISON features add up to one important conclusion:

most dependable power at lowest over-all cost.

Personally evaluate these facts. Request a visit from the Edison Field Engineer in your area. Write Edison Storage Battery Division, Thomas A. Edison, Incorporated, West Orange, New Jersey.

**Most dependable power...  
lowest over-all cost  
you get both with an EDISON**



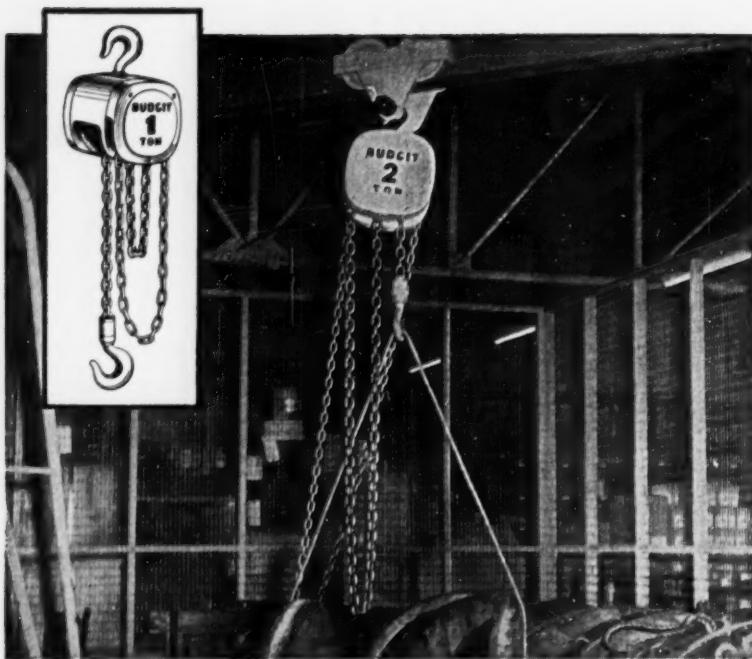
**EDISON**  
*Nickel • Iron • Alkaline*  
**STORAGE BATTERIES**

EDISON ALSO MAKES THE FAMOUS "V.P." VOICEWRITER AND THE TELEVOICE SYSTEM

Circle No. 46 on Reader Service Card

FLOW • FEBRUARY, 1954

← Circle No. 11 on Reader Service Card



## IT WEIGHS SO LITTLE, LIFTS SO MUCH . . . THE *Budgit* ALUMINUM CHAIN BLOCK

**CARRY-AROUND LIGHTNESS** is combined with toughness and spur-gear efficiency in the 'Budgit' Aluminum Chain Block. The  $\frac{1}{4}$ -ton size weighs just 29 lbs., and a 25-lb. pull on the hand chain lifts the full load. These qualities make a 'Budgit' the favorite for spot-lifting in maintenance, emergencies, construction—wherever loads must be handled quickly, economically.

**THE LOAD IS CARRIED** on two sets of gear teeth in each gear for smoother lifting. A full-jeweled load brake reduces the amount of pull required to lower loads and provides faster, easier operation.

**FOR LONG LIFE, RELIABILITY** invest in the toughest lightweight chain block ever built. The superhard load chain can't be cut with an ordinary hacksaw. Non-fracturing load hook gives warning when overloaded. No keys used in the 'Budgit'—all fastenings are splines to evenly distribute the loading on the shafts.

**SPEED ALL-SPOT LIFTING JOBS.** Choose a  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1 or 2-ton 'Budgit' Aluminum Chain Block for trouble-shooting or full-time work. Ask your "Shaw-Box" Distributor for a demonstration or write us for Bulletin No. 398.



'BUDGIT' I-BEAM TROLLEYS enable your hoist to travel as well as lift the load. They are ball bearing equipped trolleys made of steel. Easily adjustable to fit various I-Beam sizes. Capacities: 500 to 4,000 lbs. Write for Bulletin 390.

## *Budgit* CHAIN BLOCKS

MANNING, MAXWELL & MOORE, INC.  
MUSKEGON, MICHIGAN



Builders of "Shaw-Box" and 'Load Lifter' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' Industrial Instruments, and Aircraft Products.

Circle No. 88 on Reader Service Card for more information

## HIGHLIGHTS of the month's NEWS

THERE'S NEVER BEEN any debate as to the importance of good material handling to the safe operation of any plant or process, but we on the FLOW staff must admit that we were somewhat surprised at the enthusiasm of the response to our December issue. That was the one in which the major part of the magazine was devoted to the two major aspects of safety: (1) how better material handling promotes better safety; and (2) the safe operation of mechanized handling equipment.

As the "Letters" column in this issue shows, our correspondence has been heavy with requests for extra copies and reprints for the last six weeks. (One distributor, for example, wants 1,000 copies of the lead article to mail to his customers; another is planning to send to users of outdoor handling equipment a minimum of 500 reprints of "Cutting Outdoor Handling Risks".) Because all the copies we could lay our hands on were gone within a matter of days after the issue was first mailed, we have ordered reprints of the entire section. Most of these, of course, will go to those who have already requested them, but there are still a few available to those who have not yet sent in their requests.

Because of the demand for additional help in promoting plant and yard safety, we have listed in this issue safety aids offered by a number of manufacturers of material handling equipment. If you can use any of these, just indicate on the Reader Service Card the items and quantity desired and we'll see that your request is forwarded promptly. (As other manufacturers make such items available, FLOW will notify readers as fast as possible.)

Also, very shortly we'll have a



## SPEED YARD HANDLING

For greatest efficiency in handling heavy, bulky and odd-shaped materials in yards, the BAY CITY CraneWagon is ideal. It is a self-propelled, rubber-tired crane that works with speed and precision. Independent boom hoist operation provides exceptional flexibility. For instance, the boom hoist will boom-up or boom-down with load and under power only, while the CraneWagon is hoisting, swinging or travelling. That's one way to speed yard handling as illustrated here where the CraneWagon is loading bundles of sucker rods at the Emsco Derrick & Equipment yard in Los Angeles. Why not start speeding your yard handling operations by asking for complete information about BAY CITY Cranes. See your nearest BAY CITY dealer or write for catalog. BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN.



224

*Write for any of these catalogs—  
Crawler machines  $\frac{1}{2}$  yard up; Cranemobiles and CraneWagons of  $12\frac{1}{2}$ ,  
20 and 25 ton capacity—They are  
yours for the asking.*

# BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS  
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FLOW • FEBRUARY, 1954



37

\*HERE THEY ARE

The  
NEW and  
IMPROVED  
COMETS!



\* PUSH BUTTON  
CONTROL



\* PENDANT ROPE  
CONTROL

## CM COMET ELECTRIC HOISTS

Capacities:  $\frac{1}{4}$  to 2 tons

Plug in on 110 single phase  
or 220-440 volt power lines

\* CM COMET Electric Chain Hoists are now available in two models...Push Button Control or Pendant Rope Control. Designed for production line applications. Anyone can operate. One hand control, fast load spotting, flexible Herc-Alloy steel load chain, upper and lower safety limits, low power consumption, lifetime lubrication and fully enclosed working parts are just a few COMET advantages.

\* The faster, more efficient overhead handling of materials and parts with CM COMET Hoists is an immediate way to increase output and reduce unit production costs. Workers' energy is conserved for full day maximum efficiency. Floor space is saved. Production moves smoothly.

**COMET CATALOG NO. 150...**18 pages of illustrated hoist information...sent on request. Prices will be included. Write now!

CM DISTRIBUTORS ARE LOCATED IN ALL INDUSTRIAL CENTERS

**CHISHOLM-MOORE HOIST DIVISION**  
COLUMBUS MCKINNON CHAIN CORPORATION

TONAWANDA, NEW YORK  
DISTRICT OFFICES: NEW YORK, CHICAGO, CLEVELAND

In Canada: MCKINNON COLUMBUS CHAIN LIMITED, ST. CATHARINES, ONTARIO  
Circle No. 38 on Reader Service Card for more information



## HIGHLIGHTS

*Continued*

feature article on safety as it is served by manual handling equipment. In that connection, E. L. Lee, chairman of the Product Promotion and Public Relations Committee of the CFTMA, reminds us that copies of the comprehensive *Handbook of Manual Materials Handling Equipment* can still be obtained for a dollar. Just address a letter to the Caster and Floor Truck Manufacturers' Association, 27 East Monroe St., Chicago 3, Ill.

The importance of the safety aspect in material handling cannot be over-emphasized, and FLOW will continue to bring to readers features, news, tips and hints as often as possible.

• • •

With understandable pride, we want to call the attention of all FLOW readers to the all new, 1954-1955 FLOW DIRECTORY which is coming off the presses right now. It is bigger and better than ever before, and includes: a complete and illustrated guide to the machinery and equipment in the material handling field...listing of manufacturers of all equipment...a trade name index...a manufacturers' catalogs section to give you complete specifications on all leading handling equipment...an engineering and technical data section loaded with charts and graphs to help engineers design material handling systems...a list of manufacturers outlets alphabetically arranged by cities...a "yellow page" section which lists, by geographical area, the independent local sources of procurement of equipment and supplies.

# WHAT CAN YOU DO with Hapman TUBULAR CONVEYORS?

To show you graphically what Hapman Tubular Sealed-pin Chain Flight Conveyors can do — this "composite" conveyor includes 25 outstanding features. Naturally, no single application would — or could — utilize every feature.

Often a single advantage — like liquid-tight design — makes a Hapman uniquely capable of solving a problem. A few minutes' study of this composite may reveal a solution to one of your most perplexing materials handling problems. Jobs such as processing foods or chemicals while "en route" or elevating chips or sludge from a settling tank are examples.

Each Hapman Tubular Conveyor is engineered to individual requirements. Why not call your nearest representative for further discussion? Write for descriptive Bulletin F-254

Low H.P. motor drive — chain take-up may be combined.

Vibrator to discharge powders.

Volumetric feed control at discharge.

Roller turns for high load points — sharp corners.

All corrosion-resistant construction when required.

Oversize wiper or scraper flights for cleaning.

Chain parts replaceable — may be steel or spark-proof materials.

Case-hardened heads are replaceable.  
Bands usually 6 times pipe diameter.

Goes through walls, floors — indoors or out.

Inspection window or door.

Goes straight up or down.

Operates in one or more planes, and at any angle.

Sealed tight — confines vapor, liquid, fumes, odors, dust.

Requires little clearance space.

Heat or cool conveyed material — directly or indirectly.

Can process moving material under vacuum or pressure with Pneumotrol®.

You can convey two or more different materials — at same or different time.

Dodges existing equipment or obstacles.

Can have multiple receiving and discharge points.

SEALED-PIN TYPE CHAIN

Drain off liquid.

Receiving sections — can be hoppers, troughs, open or with floor-level grating.

\* Trade Mark Applied For.

## WHAT MATERIALS CAN YOU CONVEY?

### CONDITION OF MATERIALS

TYPE OF MATERIALS	POWDERS	CRYSTALS	GRANULAR LUMPS	METAL CHIPS	DUSTS	FLAKES	SLUDGES
	WET • DRY • SEMI-LIQUID • HOT • COLD • STERILE • ABRASIVE • CORROSIVE • VOLATILE • EXPLOSIVE • RADIOACTIVE						

Hapman CONVEYORS, INC.  
DIVISION HAPMAN-DUTTON COMPANY  
KALAMAZOO MICHIGAN

# BETTER YARD MATERIAL HANDLING

This 20-ton Lorain Self-Propelled Crane is handling coils of sheet steel in a Detroit plant. Note the dial scale on hoist line for convenient weighing of each load.



**Mobile, rubber-tire yard cranes handle and transport a wider variety of sizes, shapes and weights of material than single-purpose equipment can.**

The tremendous wartime and post-war development of our industrial plants has seen a similar expansion in outside storage and warehousing facilities. This has meant even greater reliance in recent years on the mobile, rubber-tire crane as a material handling tool. The operation and economic advantages of this type of equipment are as numerous as the materials it can handle, not to mention the extra "bonus" jobs it can perform.

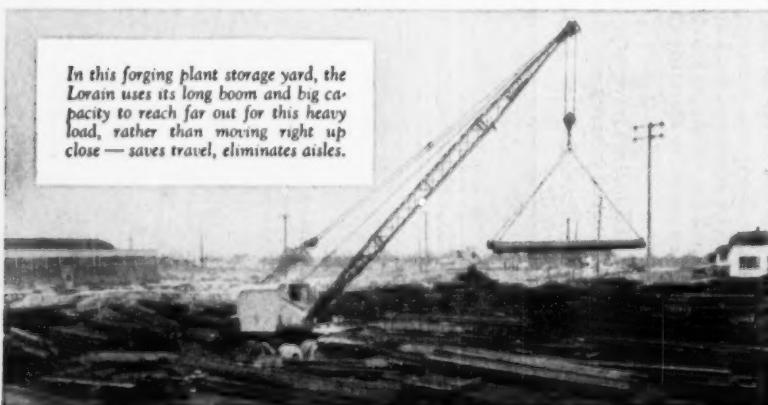
## A ONE-MAN YARD CREW

The Self-Propelled Crane, most popular of material handling yard cranes, consists of a completely revolving turntable mounted on a rubber-tire carrier with the operator controlling all crane and travel operations from the turntable cab.

Here are a few of its outstanding advantages.

1. **Unrestricted mobility** — Unlimited by tracks or fixed structures, it can serve all parts of yard, travel any reasonably smooth surface.
2. **Unlimited handling** — Handle any size, type or shape material up to 30 tons.

In this forging plant storage yard, the Lorain uses its long boom and big capacity to reach far out for this heavy load, rather than moving right up close — saves travel, eliminates aisles.

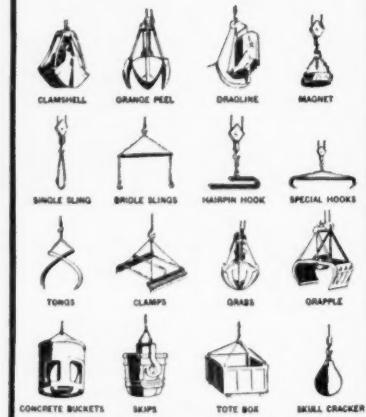


Circle No. 109 on Reader Service Card for more information

**BY THE THEW SHOVEL CO.**  
Manufacturers of  
**LORAIN CRANES FOR INDUSTRY**

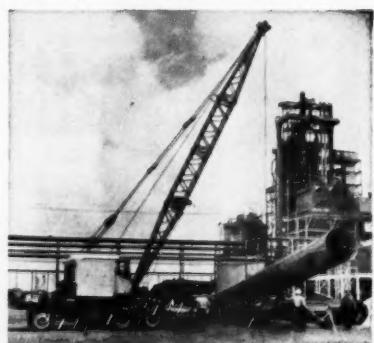
The statement has been made of Lorain Cranes that they will "handle any type, size or shape material." There are more than 16 basic types of front end attachments available (as illustrated) to permit handling anything from ashes to steel.

## 16 ATTACHMENTS — TO HANDLE SCORES OF MATERIALS



## A COMPLETE LINE OF MATERIAL HANDLING SPECIALISTS

The Thew Shovel Co. builds a complete line of "Lorain" material handling cranes. In addition to the popular single-engine Self-Propelled Crane, 2-engine, 30 m.p.h., rubber-tire Moto-Cranes are available with lifting capacities from 6 to 45 tons. Lorain Cranes can also be crawler mounted where required by ground or travel conditions. Thew-Lorain Distributors, located in all principal cities, can assist you in solving your material handling and yard storage problems.



Plant construction and maintenance are typical "bonus" jobs that versatile Lorain Cranes can do for you — in addition to your material handling.

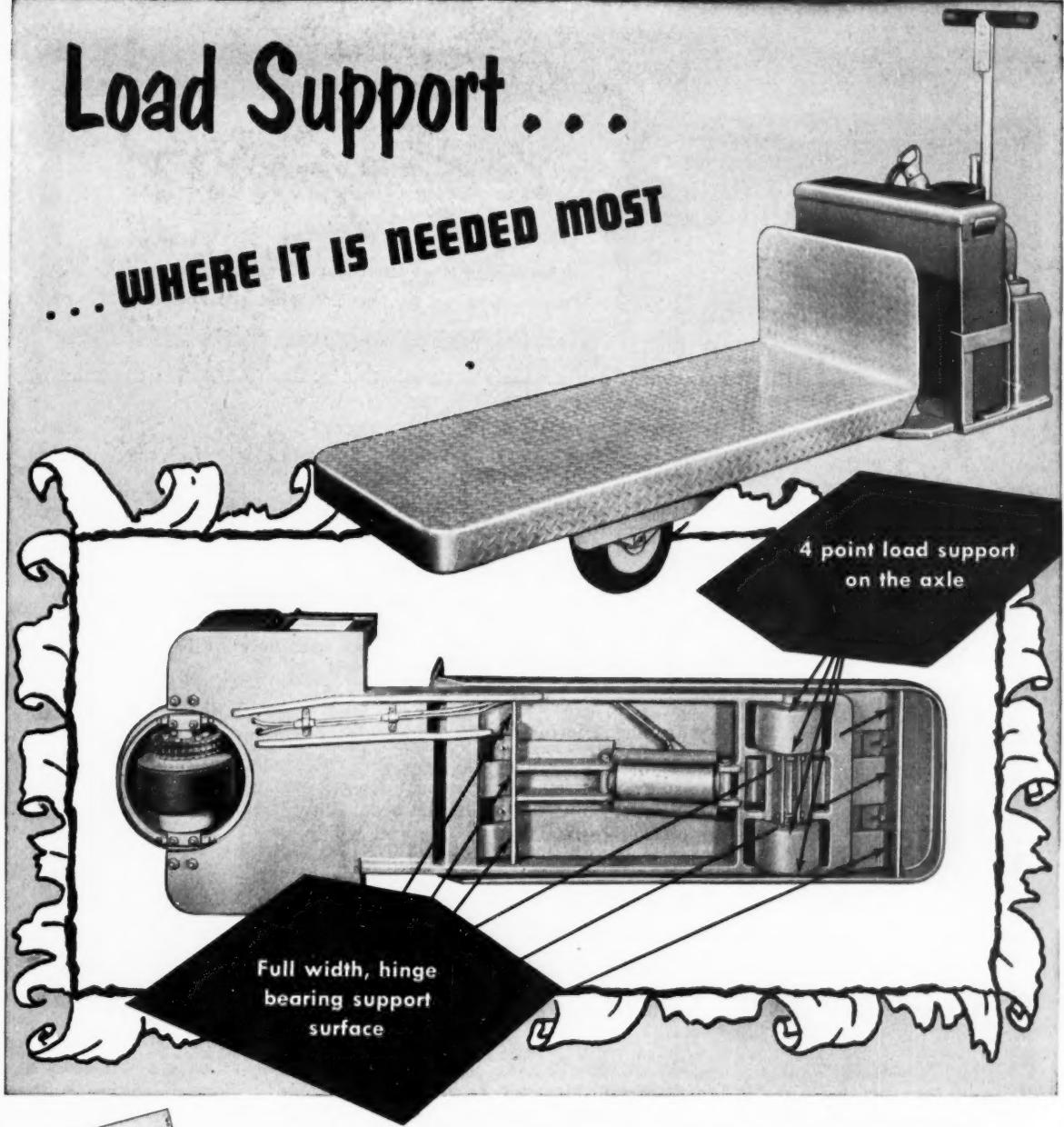
## Lorain Cranes

THE THEW SHOVEL CO., LORAIN, OHIO

FLOW • FEBRUARY, 1954

# Load Support . . .

... WHERE IT IS NEEDED MOST



Platform truck design offers maximum load support and eliminates hinges, pins and bushings. Extra LOAD SUPPORT is only one of the many features found in this model . . . and there is no additional cost for extra LOAD SUPPORT. Trucks are available in capacities up to 10,000 lbs.

Write for Bulletin No. 53 . . . and remember . . . THERE'S A MOTO-TRUC FOR EVERY PURPOSE.



The **MOTO-TRUC** Co

Representatives in Principal Cities

1955 E. 59th St. • Cleveland 3, Ohio

Pallet . . . Platform . . . Hi-Lift Trucks

LARGEST EXCLUSIVE MANUFACTURER  
OF "WALKIES"

Circle No. 99 on Reader Service Card for more information



## in Equipment

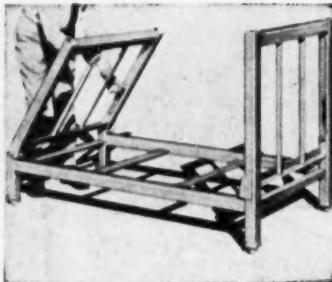
Summaries of latest information from manufacturers. For more details, use the free-mailing Reader Service Card.



### Fork Truck for Outside Work

Called the "Yardloader", a new 4000 lb. capacity fork truck is said by the manufacturer—Baker-Raulang Co.—to be a low cost unit, with travel speed of 14 miles per hour, designed for outside or rough-surface work. It has a Case, valve-in-head engine, large pneumatic tires, high ground clearance, extra heavy drive axle, and an oscillating trail axle. Lifting height is 122 in. A motor-driven gear pump supplies oil under pressure to either lifting or tilting cylinders, with speed controlled by engine acceleration.

**Circle No. 171 on Reader Service Card for more information**



### Folding, Tiering Rack

A portable, self-stacking rack with ends that fold inside the frame when empty, or for shipping, is now produced by American Metal Products Co. There are no loose parts; ends swing up and lock in vertical position for fast handling and storage. Made in a wide range of sizes, in capacities from 3000 to 5000 lbs., the racks may be stacked as many as six tiers high, fully loaded. Floors of plywood, boards or sheet steel are available.

**Circle No. 172 on Reader Service Card for more information**



### Roller Top Trailer

A caster steer, 3000 lb. capacity trailer produced by Mercury Mfg Co., designated as Type A-308-78M, has a live deck composed of two 6-roller conveyor sections 30 in. from the floor. Designed to fit into standard conveyor lines, the trailers can be automatically loaded, two units on each, with cartons or cases which are locked in proper position when roller-retaining brakes are applied. Platform size is 49x72 in. Rollers are 30 in. long, 1.9 in. diameter. Trailers have Mercury safety self couplers.

**Circle No. 173 on Reader Service Card for more information**



### Hinged Conveyor Unit

Shown in the open position, a hinged conveyor section is offered for applications where conveyors must pass through congested plant areas and/or aisleways which must be left free for the passage of workers or trucks. Counterbalanced for easy tilting, the roller "drawbridge" is said to provide a practical means for flexibility and continuity in any conveyorized operation. The equipment is built by Alvey Conveyor Manufacturing Company.

**Circle No. 174 on Reader Service Card for more information**

**JOB  
PROVED**

**GERLINGER**  
MAKES SHORT WORK OF  
**LONGEST**  
BEAMS EVER LAMINATED



Timber Structures benefits day-in, day-out, by Gerlinger cost-cut handling. Longer wheelbase and larger tires on fork lift truck insure positive maneuverability at all times regardless of adverse weather conditions, load variance.



Timber Structures management and operators alike praise Gerlinger. The plant keeps 5 fork lift trucks and 3 material carriers busy inside and out every shift. Individually, or as a team, Gerlinger heavy-duty material handlers lead the field.

## Fleet of 8 Performs "MIRACLES" in Versatile Operations for Timber Structures, Inc., Portland, Ore.

"When it's a big job in a hurry...and safety is a prime factor...we've come to depend more and more on our Gerlinger equipment!" Timber Structures' Gerlinger fork lift trucks gave emphatic demonstration of these words of Mr. R. W. Mayer, assistant general manager, in a dramatic undertaking which involved loading of five colossal beams for delivery in Washington.

And just why is a Gerlinger fork lift truck able to make routine work of picking up and loading on truck and dolly unwieldy 104-foot laminated beams, each containing 10,164 board feet of lumber and each weighing between 16,000 and 17,000 pounds? Exclusive counter-active weight distribution is part of the answer where variance in load weights and dimensions are concerned. A Gerlinger won't teeter, or back wheels dig in...54% of truck's weight is where it's needed...over front wheels...for maximum traction and easy maneuverability. Fingertip-controlled boom action...another Gerlinger exclusive...actually "floats" loads...any size or off-size...up and onto truck, dock, or pile.

### "Get on the beam"

Get on the "beam"...get the Gerlinger answer to the particular material handling problem facing your industry. Call your Gerlinger distributor now...he will be glad to prove that Gerlinger can save time, money and manhours for you, too. No obligation, of course.

#### "S" SERIES FORK LIFT TRUCKS

5 short wheelbase (106') models  
4 to 8-ton capacity  
Lifting heights from 10' up to 18'



#### "L" SERIES FORK LIFT TRUCKS

6 long wheelbase (130') models  
6 to 11-ton capacity  
Lifting heights from 10' up to 24'



**GERLINGER CARRIER CO., DALLAS, OREGON**

Circle No. 58 on Reader Service Card for more information

# How to Solve



#### P&H Zip-Lift Electric Hoist (Pushbutton Control)

Handy little power-house for loads from 250 pounds up to one ton. Versatile — in use in metal shops, dairies, hospitals, bakeries. Solves your load-handling problem within the weight limits specified. Plenty of literature available for more detailed information. Ask for it.

#### P&H Zip-Lift Electric Hoist (Rope Control)

You can do anything with this model that you can with the Pushbutton Control Zip-Lift. The less expensive rope control gives you a break on price — doesn't cut down the number of jobs you can perform. You get years of trouble-free service at an extremely reasonable initial cash outlay.

#### P&H Hevi-Lift

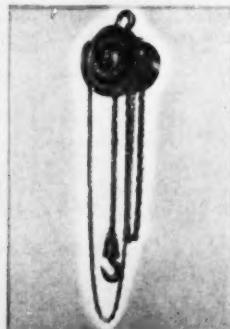
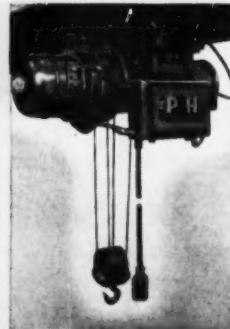
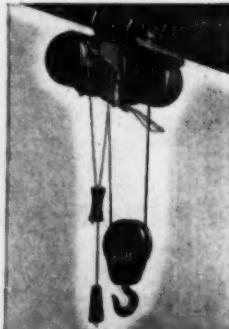
For heavy loads — and your own particular problem. The Hevi-Lift is a custom-built hoist — manufactured to your specifications. Over 3,000,000 variations possible on this husky load-handler. You're sure to find the right combination for you. Take a look at the literature available — then see your P&H distributor.

#### P&H Hand Chain Hoists

Perhaps you're in the market for a chain hoist; rather than wire-rope. If you are, you'll have to look far to find a better value than these P&H work-horses. Handles up to 25 tons easy as pie. Spur-gearred; Timken or roller bearing trolleys; Army-Type trolleys — whatever you need. Ask for literature on the complete line.

#### P&H Jib Cranes

Hang your hoist on a P&H Jib Crane — then you've got a dependable, one-two combination working for you. Eight different models—bracket-type, mast-type and pillar-type. Capacities up to 12,000 pounds. Use the coupon for fast return of literature on the complete P&H Line.



# Your Load-Handling Problems at less than 10¢ per day with versatile, hard-working P&H Hoists



LET Mr. Harold Tinus, of the Tinus Marine Service in Oconomowoc, Wisconsin tell it. Says Mr. Tinus:

"In the summer of 1953, our sixth season of marine service, we were able to install two 1,000-pound capacity P&H Zip-Lift Hoists on an I-beam above the cross runway of our building, and really take advantage of their labor-saving and back-saving power, to handle customers' boats. Never again, if we can help it, will three or four men wrestle with a boat to transfer it from an outdoor trailer to an indoor cradle, when one man — simply by pulling control cords — can hoist it better than a dozen feet a minute and put it right where we want it.

"After six months of service we had a cost analysis made to determine the economics of our

operation. The results amazed us. We found that for each day of operation of each P&H Hoist, our costs were only 9.7¢! That's less than the cost of a telephone call!

"That's *actual cost*. We can't attempt to evaluate the savings we've made in freeing workmen for other, skilled labor — rather than wrestling boats around our storerooms.

"And the best part of it is that by using the P&H Hoists we're able to handle more business — and the more we use our hoists — *the less they cost us!!*

This case history is just one of many, in many fields. A visit from a P&H representative can show you how you can make the same kind of savings in your business. Use the coupon below for information on the complete P&H Hoist Line.

This coupon and a 3¢ stamp gets you complete information on the P&H Hoist Line.

**P&H HOISTS**  
**HARNISCHFEGER**  
**CORPORATION**  
4643 W. National Ave. • Milwaukee 46, Wis.  
Circle No. 163 on Reader Service Card

-----TEAR OUT COUPON AND MAIL TODAY-----

**P&H Hoists**

**HARNISCHFEGER CORPORATION**  
4643 West National Ave., Milwaukee 46, Wisconsin

Gentlemen: I'm interested in the savings I can effect with P&H Hoists. Send me more information on Mr. Tinus' experience. I'd like to know more about P&H Zip-Lift, Pushbutton Control , P&H Zip-Lift, Rope Control , P&H Hevi-Lift , P&H Chain Hoists , P&H Jib Cranes .

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

## WHAT'S NEW IN EQUIPMENT

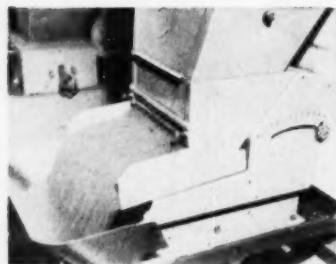
*Continued*



### Permanent-Magnet Hand Tool

For more rapid and convenient pick-up of small metal parts, scrap, nails, tacks, staples, etc., the new 70-Series permanent-magnet hand Magnetool replaces the old Model S, according to Magnetool Div. of Multifinish Mfg. Co. Improvements include elimination of a projecting shelf which impeded pick-up in certain applications, greater capacity, easier burrowing, increased durability, and greater dust and water proofing. Full release is made by simple hand-squeeze pressure.

**Circle No. 175 on Reader Service Card for more information**



### Vibrating Bulk Feeder

An extra-wide range of outputs is claimed for a new vibrating solids feeder produced by Richardson Sales Co.—from 0.1 to 20 cubic feet per min. of such materials as grains, clay, rock, fertilizer, aggregates and food products. Normal angle of feed is 5 deg. downhill, but it will also feed 5 deg. uphill with somewhat decreased output. A  $\frac{1}{8}$  h.p. motor runs the equipment. Feed rate, controlled by hand lever on the side of the machine, can be adjusted at any time during a run.

**Circle No. 176 on Reader Service Card for more information**



### "Dead-Man Control" for Floor Trucks

Called the "Hand-O-Matic Brake", equipment manufactured by Towsley Trucks, Inc., is said to stop floor trucks quickly, safely and surely when the operator removes his hands from the control bar on the push handle. The brake releases when he again exerts pressure on the bar. It can be used as a running hand brake to insure safer wheeling on inclines since speed of the truck can be regulated by the operator's grip. An engaging-pin sets at "stop or release."

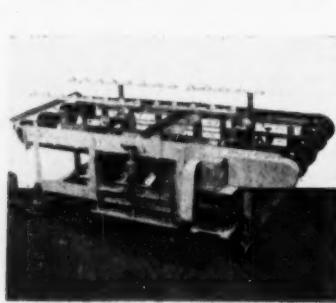
**Circle No. 177 on Reader Service Card for more information**



### Three-Quarter Yard Shovel, Crane

Two new  $\frac{3}{4}$  cubic yard capacity units have been added to the "Michigan" line of power shovels and cranes manufactured by Clark Equipment Co. Model C-24 is a crawler-excavator; Model T-24 (shown) a truck crane with 6x4 or 6x6 drive. All will be available with a full range of attachments. Features listed are new cabs affording full operator visibility, of unit design, and separate from the engine cab, providing reduced noise. Power is by a heavy duty 529 cubic inch engine with 5-speed forward, one-speed reverse transmission, and 2-speed transfer case. Power steering is optional.

**Circle No. 178 on Reader Service Card for more information**



### Sheet, Strip Handling Machine

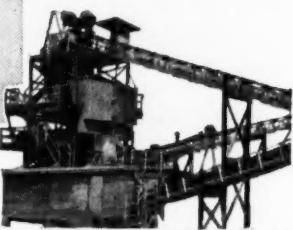
The "Coilveyor" has been produced by Fried Steel Equipment Mfg. Corp. to handle strips up to 6 ft. long, from 20 to 48 in. wide, after shearing. When the ribbon comes off the coil it passes through the leveler and is cut by the shear. Then, air operated plungers of the Coilveyor support the ribbon as it butts against a stop acting as a back gauge. As the shear cut is completed, the cut ribbon (or strip) is lowered to conveyor belts and carried away. Plungers automatically return to support the next cut.

**Circle No. 179 on Reader Service Card for more information**

*(Continued on page 156)*

# 7 THRIFTY WAYS to move materials faster!

**1**



MODEL 225 CONVEYOR COMBINATIONS. Drives, belts and accessories designed to your individual needs. Simple to assemble, move, lengthen or shorten.

**2**



MODEL TST-10 BULK TRANSPORT BODY. For dry powdered materials. High tensile alloy steel, electro-welded construction. 9-inch twin auger discharge. All controls outside body. Lengths 9-35 ft.

**3**



MODEL Q-51 SCREW CONVEYOR. For materials that roll or become fluid in motion. Underbin or undertrack screw loader easily attached. 10 to 60 ft. lengths. Portable or permanent installations.

*Hi-Speed job-fitted*



**4**



MODEL 230 PORTABLE CONVEYOR. Contour troughing. No idlers. Perfect portable conveyor for all lightweight materials.

**5**



MODEL 195 CAR UNLOADER. Arched delivery. Unloads from full length of car. This horizontal section permits full opening of car hopper doors.

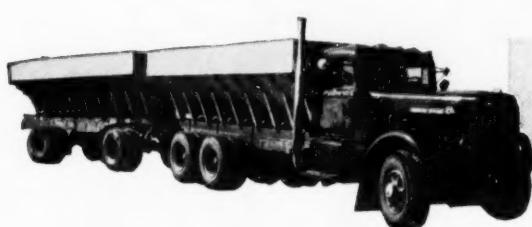
*Move it Faster for Less  
with BAUGHMAN...  
"The Thriftiest name in  
Materials Handling."*

**6**



MODEL 175 BELT AND BUCKET ELEVATOR. Fully enclosed. Centrifugal discharge for permanent or temporary installations.

**7**



MODEL ASK-3-B SELF-UNLOADING SPREADER BODY. Truck or Trailer Mounted. Equipped with drag chain and flight conveyor discharge and complete distributor and fan assembly.

**Write for More Details!**

BAUGHMAN Mfg. Co.  
Information Service Dept.  
Jerseyville, Ill.

Gentlemen: Please send me further information:

Name \_\_\_\_\_

Company Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



**BAUGHMAN MANUFACTURING CO., Inc.**

106 Arch St.

Jerseyville, Ill.

Circle No. 17 on Reader Service Card for more information

# The 2-way Mobile Radio with a thousand uses!

# IT'S THE BENDIX

# "MULTI-MASTER"

- The Bendix "Multi-Master" can be used as a fixed station.
- It can be used as a mobile unit.
- Easily adapted to narrow band operation.
- It works on either AC or DC current.
- It is available from 2½ to 60 watt output.
- Pull up . . . pull out . . . or pivot for easier servicing.
- It can be transported from one location to another.
- It can be transferred from one vehicle to another.

*It's a new, clean and rugged design. Light in weight, compact. All controls mounted on front panel.*

The Bendix\* Multi-Master incorporates all the new and outstanding features of Bendix 2-way radio. It has range and power. Static free reception. Longer life components. Low power drain.

Bendix offers a complete line of accessories from hand sets to speakers, antenna to shock mounts . . . plus all technical help in obtaining license and complete system engineering.

It costs no more to own the best . . . so look at Bendix Radio before you buy. For complete details and specifications, write today to the address below.



**BENDIX RADIO**  
2120 North Charles Street  
Baltimore 18, Md.

Please send me further information on the Bendix "Multi-Master."

Name . . .  
Address . . .  
City . . . Zone . . .  
State . . .  
Company . . . Position . . .

**BENDIX RADIO**

A DIVISION OF BENDIX  
AVIATION CORPORATION  
BALTIMORE 4, MARYLAND

Export Sales:  
Bendix International Division,  
205 E. 42nd St.,  
New York 17, N. Y., U. S. A.  
West Coast Sales:  
10500 Magnolia Blvd.  
North Hollywood, California  
Canadian Distributor:  
Aviation Electric, Ltd.,  
200 Laurentian Blvd., Montreal, Quebec

\*Reg. U. S. Pat. Off.

# Bendix • THE MOST TRUSTED NAME IN Radio

Circle No. 19 on Reader Service Card for more information

# Team up with Mercury

**GET THE JOB DONE FASTER - EASIER - AT LOWER COST**

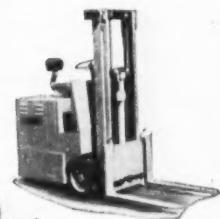


- ★ Over 41 Years Experience in the Designing, Manufacturing and Installation of Material Handling Equipment.
- ★ The Most Complete Line of Equipment for BOTH Vertical and Horizontal Handling.
- ★ Originators of the Mercury "TRACKLESS TRAIN" System of Materials Handling.

## FORK TRUCKS

A few of the outstanding quality features of Mercury Fork Trucks include—*simple, single cylinder low pressure hydraulic lift with patented cross suspension . . . magnetic contactor travel control with foot actuated, timed acceleration and controlled plugging . . . shockless wheel steering by means of compensating, controlled castor type trail axle . . . double reduction unit assembled drive.*

"YAK" FORK TRUCK Model 430  
4,000 lbs. capacity



"JEEP" FORK TRUCK  
Model 230  
2,000 lbs. capacity



"TANK" FORK TRUCK  
Model A-1544  
6,000 lbs. capacity

## TRACTORS AND TRAILERS



"Tug" Electric Tractor: Available in 3 capacities and 3 wheel, twin-3 or 4 wheel types.

"Banty" Gas Tractor: The smallest tractor made, yet develops a draw bar pull in excess of 2,000 lbs.



Also, "Huskie" and "Super-Huskie" gas tractors, 4 and 6 wheel heavy-duty models.

Trailer: Available in castor, 5th wheel or 4 wheel steer, platform or side dump types.



The Mercury "Huskie" tractor hauling a train of loaded Mercury type A-310 trailers in a large electrical manufacturing plant.

## PLATFORM LIFT TRUCKS



Illustrated right is "Shuttle-Truk" 3-wheel burden carrier, 2,000 lbs. capacity. Illus. left is "Standard" high lift truck, 6,000 lbs. capacity. Complete line includes narrow or wide models rated at 3,000, 4,000, 6,000 and 10,000 lbs. capacity with low, high or telescopic lift.



The Mercury Model A-1006 narrow type 4,000 lbs. capacity high lift truck stacking skids of corrugated paper in a carton manufacturing plant.

**MERCURY**

FORK TRUCKS • TRACTORS • TRAILERS

**FREE**

Bulletin 300, a new 44 page catalog illustrating and describing the complete MERCURY line of Fork Trucks, Tractors, Trailers and Platform Lift Trucks.

**MERCURY MANUFACTURING CO., 4154 S. Halsted St., Chicago 9, Ill.**

Circle No. 150 on Reader Service Card for more information

# Literature

## featured in this month's advertisements

**Container Ideas:** Latest developments in packing problems will be furnished by Research and Development Division of Gaylord Container Corp. No problem too difficult, from tons to ounces.

**Circle 57 on Reader Service Card**

**Battery Power:** The Diamond "Z" Grids are being featured by Gould-National Batteries, Inc. Details on request regarding increased capacity claimed.

**Circle 65 on Reader Service Card**

**Engine Hour Meters:** Catalog 569 describes Engine Hour Meters as originated and manufactured by John W. Hobbs Corporation. This timing instrument said to take guess-work out of maintenance, help prevent breakdowns and prolong equipment life.

**Circle 70 on Reader Service Card**

**Hydraulic Ramps:** Complete information will be sent by The Joyce-Cridland Company on their Hydraulic Vari-Ramps. Units are available in sizes, capacities and vertical movements to fit requirements.

**Circle 129 on Reader Service Card**

**Conveying Equipment:** Specials may also be had from Standard Conveyor Company. Informative matter contained in Bulletins SPT11 and 63-D.

**Circle 126 on Reader Service Card**

**Conveyor Belting:** Abrasive materials and their handling by Thermoid Conveyor Belting Co. is described in Catalog 3687. Claimed to lower handling costs per ton.

**Circle 130 on Reader Service Card**

**Storage Racks:** Racks to handle pallets, skids, drums, dies and coils, standard and adjustable, are described in catalog of American Metal Products Co.

**Circle 7 on Reader Service Card**

**Shop Boxes:** Tote-Shop Boxes with metal or wood bottoms may be had from Cesco Container Co. Further details available on request.

**Circle 30 on Reader Service Card**

**Steel Lifters:** Bulletin SL-28 describes and illustrates CulLEN-Friestadt Co. lifters. Money and time saving advantages are pointed out.

**Circle 147 on Reader Service Card**

**Scrap Removal:** Production is said to be speeded up and shut-downs eliminated through the use of CHIP-TOTES and MAY-FRAN engineered handling systems. Catalog available.

**Circle 91 on Reader Service Card**

**Electric Walkie:** Complete facts and data on the Dyna-Dual Power Unit of the electric walkie manufactured by Lift Trucks, Inc., free on request.

**Circle 83 on Reader Service Card**

**Steel Strapping:** Free advice on tying problems is offered by Cerrard Steel Strapping Division, U. S. Steel Corp. Phone, write or wire direct.

**Circle 68 on Reader Service Card**

**Weather Screens:** Dock covers provide all weather protection for materials, men and machines. The Elwing Corporation will send descriptive literature.

**Circle 50 on Reader Service Card**

**Overhead Conveyor:** Catalog #220 outlines three simple steps for installation of overhead conveying equipment manufactured by Coburn Sales and Engineering Co.

**Circle 39 on Reader Service Card**

**Fork Truck Tips:** Lewis-Shepard Products has prepared eight brochures giving tips on purchasing a fork truck. Interesting and informative data.

**Circle 82 on Reader Service Card**

**Facts Savings Booklet:** New facts booklet on savings by use of diesel or gas industrial trucks, has been prepared by the Buda Co. Thirty-six various model trucks are available.

**Circle 26 on Reader Service Card**

**Conveyor Guide:** Free 14 page guide to aid in selection of proper conveyor belt may be had from Buffalo Weaving & Belting Co.

**Circle 27 on Reader Service Card**

# YALE *first to offer*

## "3-Way-Finance-Plan"

**The most flexible finance-lease plan available to industry**

Look what you get! A payment plan "tailored" to meet your needs . . . plus prompt delivery of the Trucks you choose.

### Time payment plan

Now, you can have the YALE TRUCK you need on lowest monthly charges . . . after a small down payment. You get immediate, cost-cutting use from America's best-known Industrial Trucks . . . have years to pay.

### Leasing plan

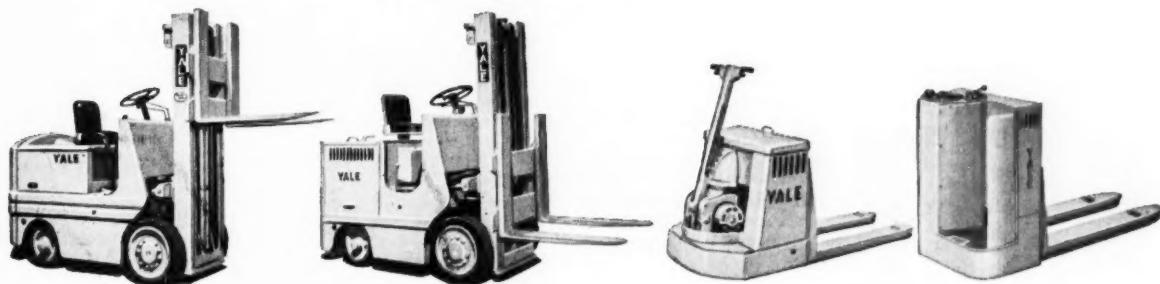
The length of leasing period depends entirely on your requirements. But, whatever you choose, no capital outlay is required . . . and the monthly rentals are often tax deductible as current operating expenditures.

### Lease with purchase-option

Get the advantages and savings of the straight lease plan: no initial cash outlay . . . small monthly rentals . . . immediate use. But, you can arrange for full title by paying an additional sum at end of contract period.

*See how quickly a Yale Truck pays for itself in your plant or warehouse*

And, every YALE TRUCK . . . Gas, Electric, Diesel, LP-Gas . . . is the finest of its type . . . the modern mechanized equipment that, for many firms, has cut handling costs in half . . . then in half again.



Gas, Electric, Diesel and LP-Gas Trucks • Worksavers and Warehouses

# YALE\*

INDUSTRIAL TRUCKS  
AND HOISTS

\*Reg. U. S. Pat. Off.

----- MAIL THIS COUPON TODAY -----

The **YALE & TOWNE** Manufacturing Company, Dept. 42  
Roosevelt Boulevard, Philadelphia 15, Pa.

Please have your local representative call with complete information on the YALE "3-Way-Finance-Plan"

Company \_\_\_\_\_

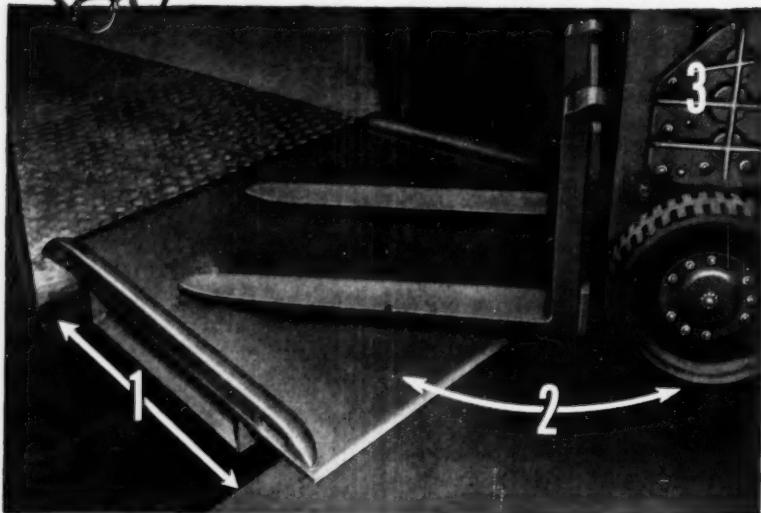
Name \_\_\_\_\_ Title \_\_\_\_\_

Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_

In Canada write: The Yale & Towne Manufacturing Company  
St. Catharines, Ontario, Canada

Circle No. 142 on Reader Service Card for more information

**LOOKING INTO THE FACTS**  
... LEADS INEVITABLY TO MAGCOA



**This light-weight HEAVY-DUTY  
MAGCOA DOCKBOARD  
is a Better Investment . . . and here's why**

1. **Made for this Specific Span**—You know the problem of bridging car-dock and truck-dock spans. No problem in this case: the Magcoa representative specified the exact size Dockboard for this span.
2. **Made for this Specific Turning Radius**—This is a narrow dock. The lift truck's turning radius could have presented a problem—but didn't. This Magcoa Dockboard flares out just enough for this narrow dock . . . permits part of the turn to be made while the truck is on the board.
3. **Made for this Specific Truck and its Load**—As you know, the weight of different handling equipment and loads varies considerably. No problem here: this Dockboard was made for the specific weight requirements of this company's equipment with top capacity loads.

**Quick Delivery—Long Life—Low Net Cost**—Ordinarily you'd assume that equipment designed for specific requirements would get a premium price or take longer to manufacture. No problem on that score: Every Magcoa Dockboard is manufactured on a mass-production basis; and, if there is sometimes a price differential, it can be checked off as negligible compared to the greater long time value you get in a Dockboard that fits your specific needs.

**Safety, Economy, Efficiency Features**—Only Magcoa gives you all these features: (1) rounded curb-ends for safer turns, (2) quarter-round safety curbs that protect tires while preventing run-offs, (3) comfortable one-piece hand holds for safe lifting and positioning, (4) angled crown that keeps edges flush on floors, (5) rounded edge beveling that saves tires, equipment, loads, and (6) rugged safety spans for extra strength and elimination of slipping.



Another "tough" bridgeplate problem solved quickly and permanently by a Magcoa Dockboard.

**MAGNEZIUM COMPANY OF AMERICA**  
MATERIALS HANDLING DIV., EAST CHICAGO 1, IND. — Representatives in Principal Cities

**DIVISION OFFICES:**

NEW YORK 20,  
30 Rockefeller Plaza  
PHILADELPHIA 18,  
8001 Southampton Ave.  
WASHINGTON 5, D. C.  
Walker Bldg.  
HOUSTON 17,  
2657 Main St.  
LOS ANGELES 34,  
8922 W. 25th St.  
SAN FRANCISCO 4,  
Embarcadero

Please send:  Dockboard Facts File  Portable Yard Ramp Literature

Name & Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City-Zone-State \_\_\_\_\_

Circle No. 86 on Reader Service Card for more information

**Economical Travel:** Pickup Trucks said to cost only 1/5 cent per ton-mile are manufactured by AUTOETTE, Inc. Brochure giving full particulars is available.

Circle 10 on Reader Service Card

**Oilless Bearing:** A conveyor roll bearing said to require no maintenance is manufactured by Arguto Oilless Bearing Company. Available for use with standard tubing with O.D. up to 4".

Circle 144 on Reader Service Card

**Pay-As-You-Go:** Full details on fork truck purchase at low monthly cost with no down payment is available from Clark Equipment Co.

Circle 34 on Reader Service Card

**Light Weight Conveyor:** Aluminum wheel or roller conveyor is now being manufactured by E. W. Buschman Co. Bulletins 15 and 18 give further details.

Circle 28 on Reader Service Card

**Wire Rope Handling:** Booklet entitled "The Right Rope For The Job", containing helpful wire rope information, is available from American Steel & Wire.

Circle 14 on Reader Service Card

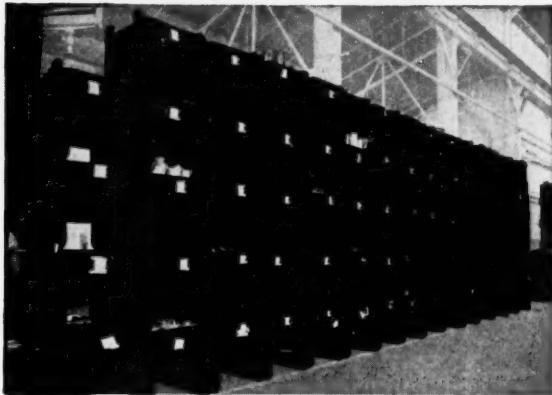
**Mobile Radio:** Full information on the Bendix "Multi-Master" 2-way mobile radio is available from this company. Unit is compact, said to have "a thousand uses".

Circle 19 on Reader Service Card

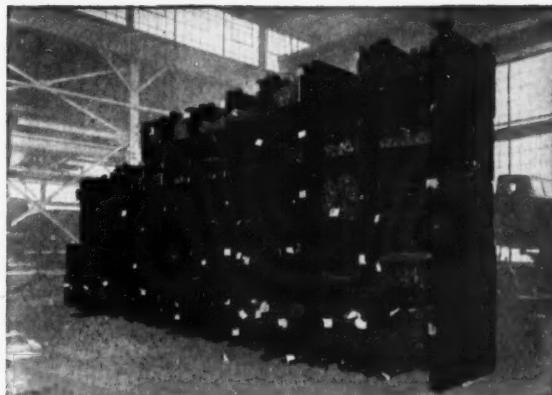
**Electric Truck Maintenance:** Elwell-Parker Company describes 150 models of Electric Industrial Trucks in new General Catalog. Low maintenance feature is pointed out.

Circle 49 on Reader Service Card

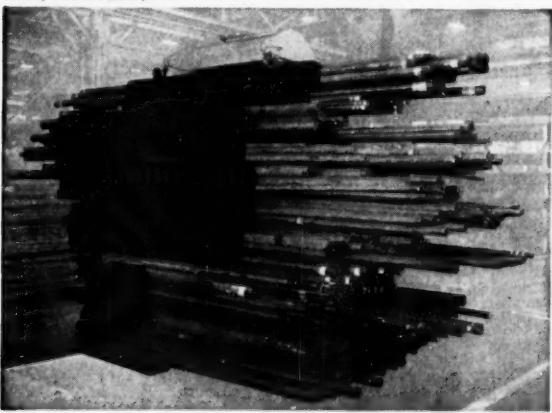
# **Here's How POWELL Job-Designed Handling Equipment Reduces Costs on Variety of Products for Machine Builder . . .**



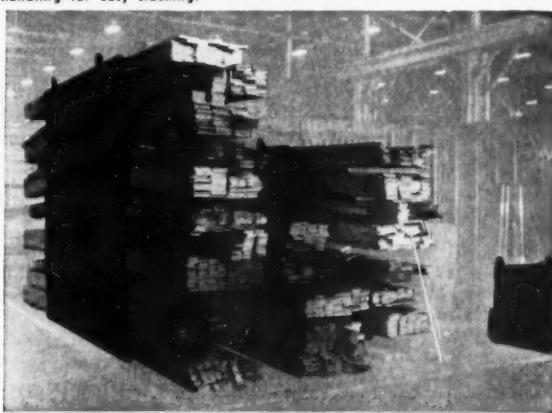
POWELL Standard Box Platforms permit uninterrupted production flow . . . eliminate inventory headaches and present neat, orderly stock control of small, odd-shaped parts.



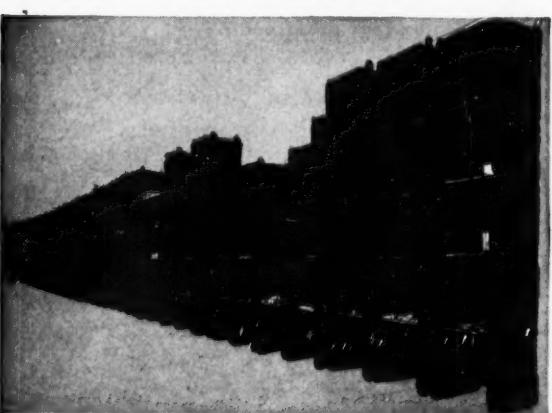
POWELL Open-End Rack Platforms permit instant identification for semi-finished and finished parts. Reinforced side entries allow ready lift truck handling for easy stacking.



POWELL Bar Carriers have long been standard equipment in plants where control of stock bars, rod, pipe, tubing, etc., is essential.



Hard to handle flats and beams, too, are contained in easy-to-get-to, orderly fashion by using the heavy-duty POWELL Bar Carrier.



POWELL complete painting facilities are designed especially for coating containers with tough, wear-resisting paint that makes POWELL all-steel equipment popular where outside storage is necessary.

One of the nation's leading road machine manufacturers is minimizing production costs by taking advantage of modern materials handling methods. Here's how it works. Each job is thoroughly surveyed; then, POWELL materials handling experts take over and recommend a container that exactly fits each job requirement. Here you see a few of the many types of these POWELL containers that have enabled this manufacturer to bring his cost far below the industry's average.

**PRESSED METAL STAMPINGS**—The engineering capacity, press facilities and die making equipment of Powell's Custom Stamping division are among the finest in the nation. Make a note now to call Powell the next time you're in the market for quality stampings.



**THE POWELL PRESSED STEEL CO., HUBBARD, OHIO**

Originators of All Steel Cold Formed Materials Handling Equipment  
In Greater Youngstown

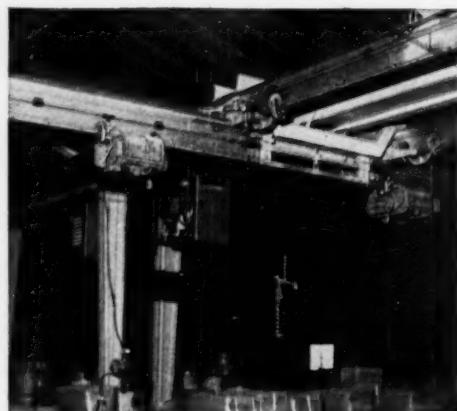
Circle No. 110 on Reader Service Card for more information

FLOW • FEBRUARY, 1954

for smooth operation at low maintenance cost use.....

# AMERICAN MONORAIL CRANES

Three-ton hoist hook service extends from craneway to craneway by finger-tip controlled passage of carrier across crossover with cranes interlocked at each end.



One-ton hoist operated from crane bridge to crane bridge interlocked at crossover between craneways.



Three MonoRail cranes are interlocked to form passageway for transfer from receiving dock to steel storage area. Crane in foreground interlocks with spur track to each shear.

To handle variable loads over maximum areas, MonoRail Cranes offer smooth travel, easy movement, interlocking service between and beyond craneways, low initial cost and most

important low maintenance cost. American MonoRail engineers are experienced in all phases of "up and over" handling. They are available for free consultation at your convenience.



Write for C-1 Bulletin

AMERICAN

OVERHEAD  
HANDLING  
EQUIPMENT

# MonoRAIL

COMPANY

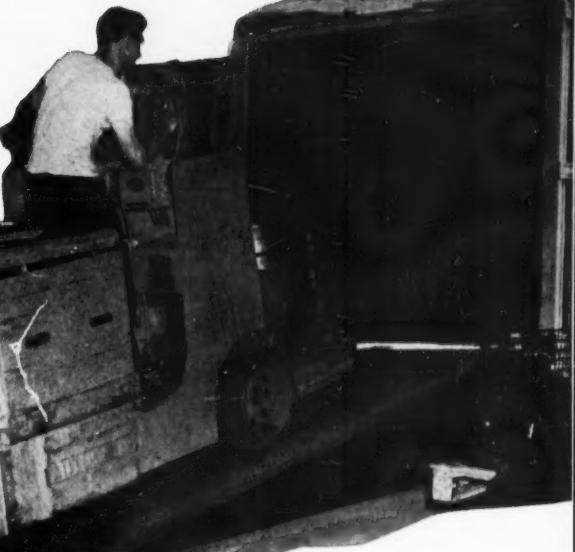
13129 ATHENS AVENUE • CLEVELAND 7, OHIO

Circle No. 6 on Reader Service Card for more information

FLOW • FEBRUARY, 1954

Circle No. 136 on Reader Service Card

# LOADING HALF THE TIME... DOUBLE THE EFFICIENCY



## WAYNE LOADING DOCK RAMPS

...tilt to meet the load. Hand or industrial lift trucks roll smoothly into truck or trailer from shipping bay.

Just touch the control and the quick-action hydraulic system raises the heavy-duty all-steel ramp to proper height. Leveling fingers anchor it and the throw-over bridge spans the gap between truck and ramp. Cuts hours from shipping time . . . speeds warehousing time and cost . . . leaves more road-time for trucks . . . gets more work done with less effort.

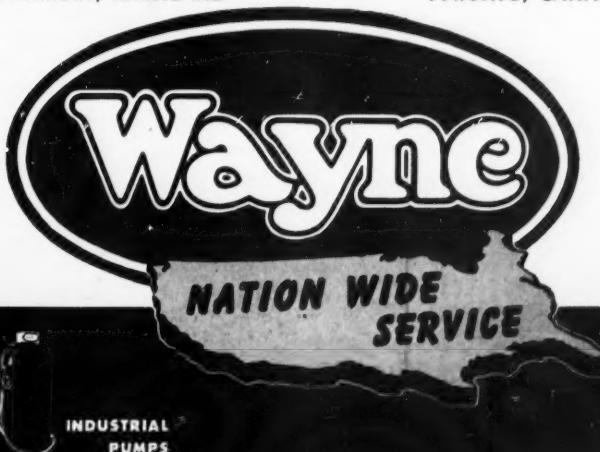
Wayne Ramps are engineered for you: lifting and lowering heights, platform sizes, power units and controls fit your requirements *exactly*. This is all part of Wayne's "Liftronics" — the scientific approach to lift problems that designs Lifts for your job, builds them to fit your plant layout.

Write today for "LIFTRONICS" — data book on complete Wayne line of Industrial Lifts (Loading Dock Ramps and Truck Lifts, Platform Lifts, Cross-over Bridges, Industrial Truck Service Lifts).



**THE WAYNE PUMP COMPANY**  
SALISBURY, MARYLAND

TORONTO, CANADA



COMPRESSORS

HOSE  
REELS

LUBRICANT  
DISPENSERS

INDUSTRIAL  
PUMPS



## Engineered with All the MOST WANTED FEATURES

### IMMEDIATE DELIVERY

MICHIGAN has a national reputation for *immediate delivery* on custom-engineered cranes of unequalled dependability, durability and low cost! Literally hundreds of letters in our files from industries like yours is your absolute assurance of unbelievably prompt installation of a Michigan Approved Crane which meets your exact requirements. No finer cranes have ever been built, because Michigan quality-controlled manufacturing is never sacrificed, even in the smallest detail, to the most rigorous delivery deadline!

#### SHOCK RESISTING FLUID DRIVE

Power is transmitted through moving oil, protecting motor and drive mechanism from shock.

#### ANTI-FRICTION BEARINGS

Moving parts are mounted on ball or roller bearings, reducing wear from friction.

#### PUSH-BUTTON MAGNETIC CONTROLS

An all-important feature which protects motors against damage from overloads.

#### EXTRA-RIGID BRIDGE

Your assurance of the utmost in stability and safety, a plus Michigan feature.

#### LOWER HEAD ROOM

Lets you lift loads higher, allows more overhead space for stacking and storage.

SEND ME  
YOUR NEW  
CRANE  
BOOKLET

Name \_\_\_\_\_  
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City \_\_\_\_\_ State \_\_\_\_\_

WRITE FOR FREE LITERATURE TODAY!  
**MICHIGAN CRANE & CONVEYOR CO.**  
117 MCKINSTRY AVENUE • DETROIT 9, MICHIGAN

Circle No. 94 on Reader Service Card for more information

**Engineered Containers:** "The General Box" pamphlet tells how many manufacturers are cutting packaging costs 25%. Free copy sent on request.

Circle 143 on Reader Service Card

**Loading Ramps:** Eight-page bulletin prepared by Rite-Hite Division of Loomis Machine Company tells how to utilize available dock area to best advantage. Five models manufactured in capacities of 10,000 and 20,000 lbs.

Circle 84 on Reader Service Card

**Conveyor Reports:** Field Reports describing materials handling problems solved through use of conveyor, has been compiled by the Rapids-Standard Company. Your problem solved by trained engineers. No obligation, of course.

Circle 113 on Reader Service Card

**Storage Bins:** Information folder, "Bins with the Strength of Pillars" may be had from Neff & Fry, manufacturers of super-concrete stave storage bins. Valuable materials handling systems outlined.

Circle 100 on Reader Service Card

**Floor-to-Floor Conveyors:** Engineering services available without charge from Metzgar Conveyor Company. Floor-to-floor belt conveyor may drastically cut handling costs.

Circle 93 on Reader Service Card

**Floor Maintenance:** Fully illustrated bulletins on the gas or electric Tennant Industrial Floor Machines may be had for the asking. Literature gives 336 reasons why floors can be cleaned faster by their products.

Circle 129 on Reader Service Card



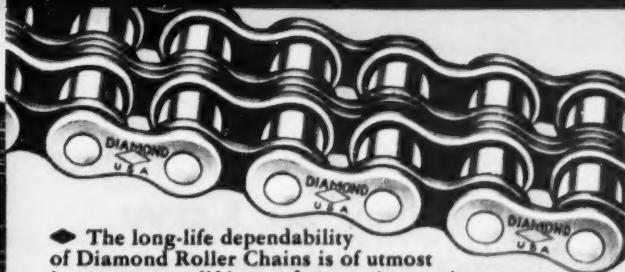
# DIAMOND ROLLER CHAIN DRIVES

*For Hydraulic Transverse Cylinders on Baker-Lull Traveloaders*



**SHOT-PEENING SINCE 1944**  
Diamond Chain has long recognized that certain types of internal stressing of chain parts would increase fatigue resistance. To this end, link plates have been specially processed and chain rollers and other parts have been shot-peened since 1944.

**PITCH HOLE PREPARATION**  
Maximum rigidity of links insured by special pitch hole preparation for 100% effective bearing area of pin and bushing. Longer life, smoother operation.



◆ The long-life dependability of Diamond Roller Chains is of utmost importance on lifting and conveying equipment.

On Baker-Lull Traveloaders the hydraulic transverse cylinders are driven by two-strand Diamond Roller Chains. The chain drive serves two purposes—one to propel the lifting tower in and out, and the other to equalize the pressure in the two transverse cylinders.

Speed ratios are definitely maintained, there is no slippage and shafts can be close together or far apart to meet design requirements.

For over 63 years Diamond Roller Chains have proven their reliability on equipment and machinery built by America's leading manufacturers... Practical recommendations by our experienced engineering staff can help save your time in arriving at correct applications. Your inquiry is awaited.

**DIAMOND CHAIN COMPANY, Inc.**

Where High Quality Is Traditional

Dept. 624, 402 Kentucky Avenue, Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

Please refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

**DIAMOND**



**ROLLER  
CHAINS**

Circle No. 161 on Reader Service Card for more information



Equipped with a V-type snow plow, this MM Model RTI Wheeler gets easily into cramped quarters . . . does a fast job of clearing narrow driveways or traffic lanes.



With this fluid-driven sweeper mounted on the RTI, you sweep traffic lanes, parking lots, and storage yards fast and clean. You get rid of the snow before it has a chance to melt and form troublesome ice.



Deep, hard-packed snow drifts are no problem for this rotary plow and blower, mounted on the RTI. Powerful blower distributes snow well away from plowed area . . . eliminates banking.

## Wheeled Hydraulic “Packages” Move Snow at Low Equipment Cost

Snow removal is a non-productive *must* that taxes any budget. That's why faster, more efficient snow handling systems are constantly being sought. MM Wheelers have proved a low-cost answer to snow removal problems because they mount a wide choice of snow handling equipment on the same basic materials-handling machine used the year around.

For big capacity loading, the heavy regular material bucket can be replaced with a lighter and extremely large snow bucket. For plowing, either V-type or rotary plows can be mounted. For other jobs, fluid drive sweepers are the most economical and efficient equipment.

High road speeds enable Wheelers to cover ground fast. Short turning radius and hydraulic control of snow handling attachments permit fast, easy operation in close quarters. When windrowed snow

must be loaded without blocking traffic lanes, recently-developed side-dump buckets are an effective solution. All-weather cabs are available to permit operation under any weather conditions.

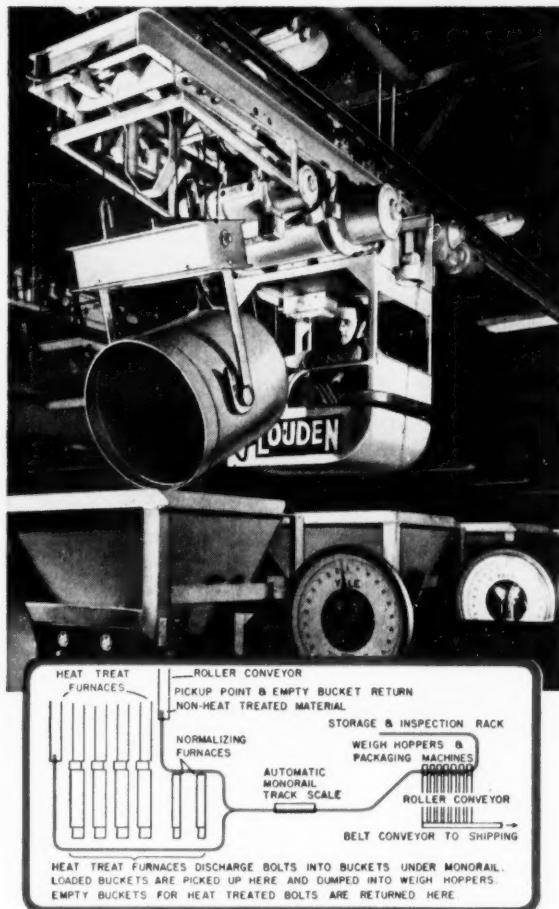
While snow handling is an off-season job, it will pay to consider Wheeler advantages for other materials-handling jobs, too. Write for complete information on the 30-horsepower Model RTI and the 57-horsepower Model UTIL with shuttle gears for 6 forward and 6 reverse speeds. UTIL features now available include the new turbo-cell diesel engine and hydraulic power-flow steering.



**MINNEAPOLIS-MOLINE**  
MINNEAPOLIS 2, MINNESOTA

Circle No. 97 on Reader Service Card for more information

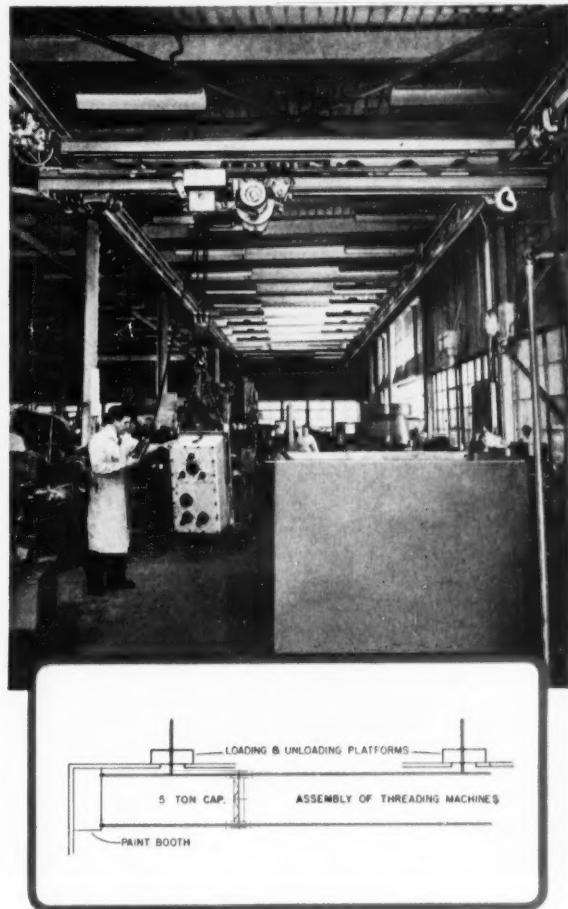
# Parts for packaging or components for assembly?



## Louden engineered overhead handling speeds and saves in many ways

Many plant executives have found a broad avenue to savings and production increases in Louden engineered Monorail and Crane systems . . . products of the longest overhead handling experience.

Above, left, a Louden cab-controlled carrier conveys heat-treated parts from furnaces to packaging machine hoppers. With handling overhead, furnaces are grouped closer together. Rehandling is elim-



inated. Machine non-productive time is cut. Much the same is true of the installation shown at the right where a Louden 5-ton crane is handling a component for final assembly in a screw thread machine factory.

Let Louden's long experience and complete line of equipment bring you the best solution to your handling problems.

**THE LOUDEN MACHINERY COMPANY**  
4302 Broadway, Fairfield, Iowa  
A Subsidiary of Mechanical Handling Systems, Inc.



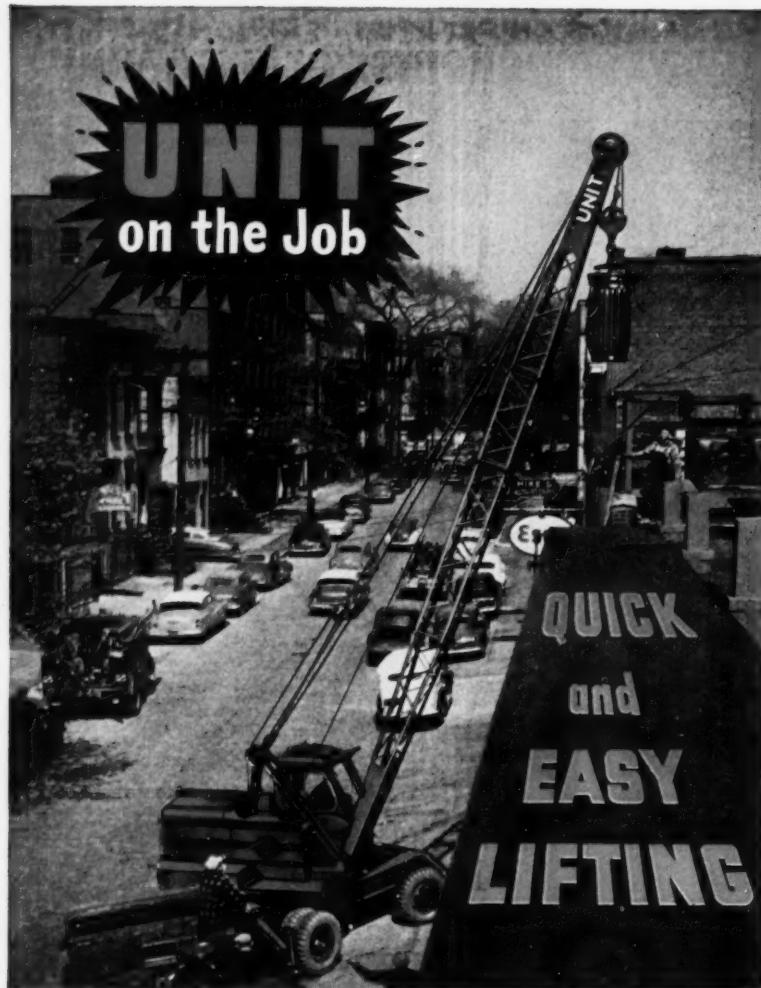
**SEND FOR THIS BOOK—**  
Write for your copy of  
"Economical Material  
Handling" . . . full of time-  
saving, cost-cutting ideas  
and case histories. Free  
. . . no obligation.

**Louden**  
MONORAIL & CRANES

**Since 1867—the first name in materials handling**

Circle No. 159 on Reader Service Card for more information

FLOW • FEBRUARY, 1954



For SM-O-O-THER OPERATION you'll prefer UNIT 357 Mobile Crane equipped with TORQUE DRIVE. It's a machine that travels anywhere . . . works efficiently where space is limited. Controlled and operated by ONE man. Powered by ONE engine. Provides full-circle, fast-cycle operation. Easy hydraulic steering from within the FULL-VISION CAB. Promotes safety. For HIGH PRODUCTION and LOW MAINTENANCE get the facts regarding UNIT 357.

*Write for Bulletin No. L-302.*

**UNIT CRANE & SHOVEL CORPORATION**  
6531 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U.S.A.



**1/2 or 3/4 YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY  
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL**



**All Models Convertible to ALL Attachments!**

Circle No. 135 on Reader Service Card for more information

**Fast Labeling:** Free sample packet of labels, together with descriptive folder, is offered by Weber Label and Marking Systems. Labels printed, marked and counted in one operation, at rate of 100 per minute.

Circle 138 on Reader Service Card

**Stapler Packaging:** Packaging costs are said to be greatly cut by International Staplers. Their bulletin C-201 gives details.

Circle 76 on Reader Service Card

**Effective Bin Flow:** Neoprene panels by PneuBin are said to greatly reduce operating expense where flow stoppage problems are involved. Product manufactured by Gerotor May Corp. "Flow Stoppage Report" and free literature available.

Circle 59 on Reader Service Card

**Industrial Radio:** How the 2-way radio communication efficiently organizes industrial production is described in free booklet published by General Electric Company.

Circle 66 on Reader Service Card

**Yardloader Info.:** Information and specifications on the new Baker EY-40 Yardloader are available from The Baker-Raulang Company. This 4000# gas truck has speed of 14 m.p.h., is said to be ideal for outdoor use.

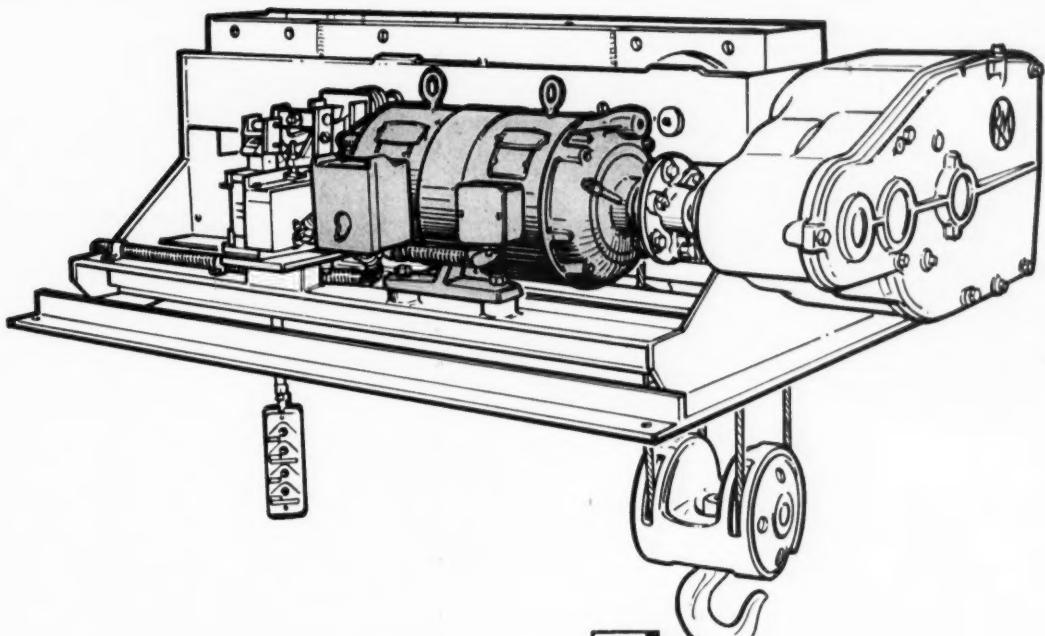
Circle 146 on Reader Service Card

**Versatile Tractor Shovel:** Equipment flexibility is an important answer to high production costs. Allis-Chalmers HD-5G Tractor Shovel digs, carries, dumps, stockpiles, spreads or loads materials of all kinds.

Circle 2 on Reader Service Card

**Bag Packer:** Performance is guaranteed by the Black Diamond automatic controlled weight Valve Bag Packer and Bag Settler. Details available on request.

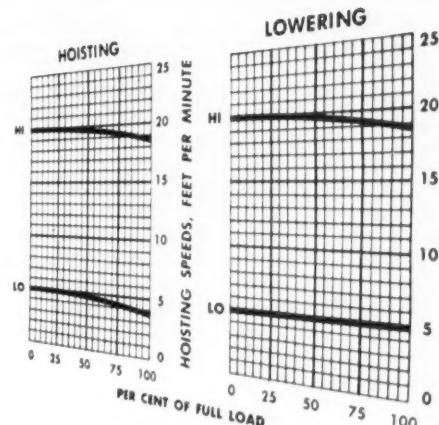
Circle 23 on Reader Service Card



# mUSCles

**ALWAYS UNDER ABSOLUTE CONTROL**

You get positive load handling from zero to rated capacity in either speed with Robbins & Myers "Dual-Duty" (two speed) hoists. Twin muscles—one fast, one slow—are embodied in the simple, trouble-free polyphase squirrel cage R&M hoist motors—linked together in a common housing. Three to one, or four to one speed ratios provide fast lift or lower, with slow gentle speed for accurate spotting. Two motors—the extra safety factor that prevents line shutdowns. If one motor should fail, the other would finish the job. And it can too! The graphs tell the story—less than 14% speed variation when handling rated load in low speed! Conventional multi-speed hoists can't touch that record. *Load Capacity:* 1,000 to 20,000 lbs.; *Speeds, low:* 2½ to 13½ f.p.m.; *high:* 10 to 54 f.p.m.; *Controls:* 2 or 4 pushbutton (4 is standard); *Mounting:* Lug or hook—plain, geared or motorized trolleys.



*take it up with*

**ROBBINS & MYERS, INC.**

SPRINGFIELD, OHIO

BRANTFORD, ONT.



VENTILATORS



MOYNO PUMPS



HOISTS CRANES



MOTORS



FANS

clip  
staple to letterhead  
add name & title

Have representative call.

Send D-D hoist bulletin 880.

1410 w

Circle No. 117 on Reader Service Card for more information



## Here's a One-Man Bulk Materials Handling System for Your Plant...

In the Dempster-Dumpster System of bulk materials handling only one man, the driver of the truck-mounted Dempster-Dumpster, is required for operation. The Dempster-Dumpster serves scores of detachable Dempster-Dumpster Containers. Container capacities range up to 4 times that of conventional dump truck bodies and each container

is designed to suit the materials to be handled—be they solids, liquids or dust . . . hot or cold . . . bulky, light or heavy. You simply place these containers at convenient materials accumulation points inside or outside buildings. When loaded each container is picked up, hauled and emptied (as shown above) or load set down intact. Entire op-

eration is handled by hydraulic controls in cab.

Containers shown below are just a few of the many available or that can be built to meet your needs. They enable you to handle, at tremendous savings, materials of many descriptions—trash and waste materials, raw materials, finished products, etc.—with only one truck and only one man, the driver.

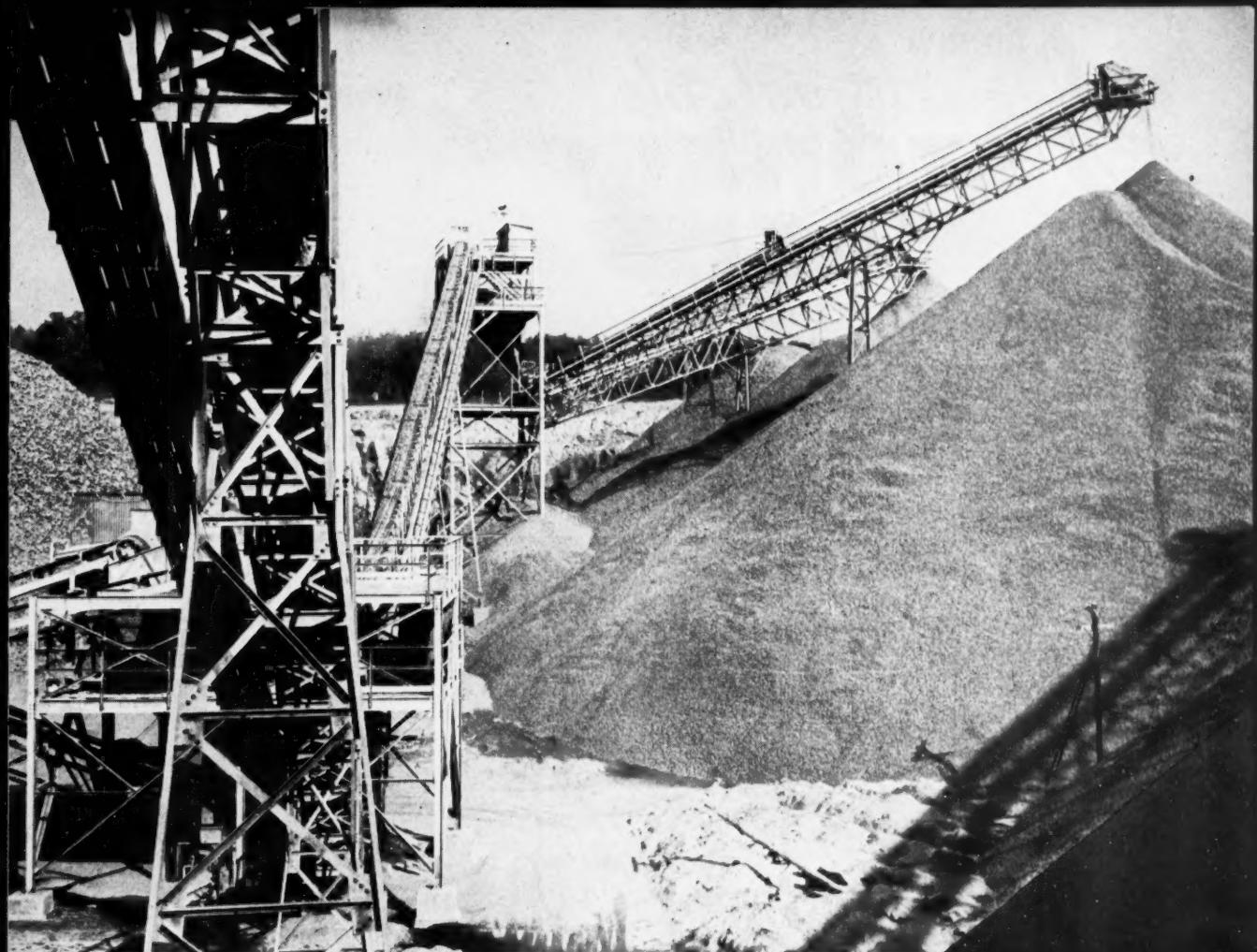
Without question, the Dempster-Dumpster System is the most economical and most efficient method of plant materials handling by truck ever devised!

Write to us for complete information. Manufactured exclusively by Dempster Brothers, Inc.



One Truck-Mounted  
Dempster-Dumpster Handles Scores  
of Containers... All Designs... All Sizes

**DEMPSTER BROTHERS, 624 SHEA BLDG., KNOXVILLE 17, TENN.**



## Thermoid Conveyor Belting cuts handling costs in quarries



There's a Thermoid Conveyor Belt designed to lower your handling costs on every quarry job. Here are three examples:

- **HT** For extremely abrasive materials such as granite, trap rock, flint rock, quartz ore;
- **A** For slag, lime rock, crushed stone and other highly abrasive materials;
- **C** For moderate abrasives such as sand, loam, soda, gravel.

Thermoid's exclusive impregnation process welds carcass and cover into an exceptionally strong, durable belt. Finest quality reinforcement and specially compounded rubber stocks assure long life... lower your handling costs per ton. Call your Thermoid Distributor, or write direct for Catalog #3687.



Conveyor & Elevator Belting • Transmission Belting  
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

# thermoid

Rubber Sheet Packings • Molded Products  
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N.J., Nephi, Utah

# THE NEW P.S. Adjustable STORAGE RACKS

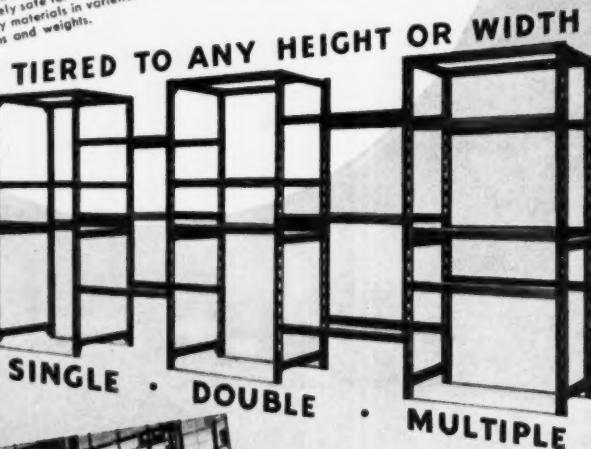


**NO BOLTING**  
**NO WELDING**

Cross-bars lock into slots on uprights, minimum of 4" apart, making racks absolutely safe for storage of light or heavy materials in varieties of dimensions and weights.

**EASY TO ASSEMBLE  
OR DISMANTLE**

**NOW!** Convenient new design. Unsurpassed for simplicity. Can be assembled or dismantled easily and quickly by one workman. Rack space adjustable to any height by merely lifting and inserting cross-bars with male joiners into slotted vertical uprights. Hundreds of different uses in plants, warehouses, etc. All-steel construction. Built to customer specifications.



Item  
C-1070



Easy, convenient storage for materials in boxes, on skids, pallets, etc. Adaptable for any application. Dimensions of cross-bars, uprights, and slot-spacing specified by customer.

DESIGNED AND MANUFACTURED BY

**Palmer-Shile Co.**  
16012 FULLERTON AVE., DETROIT 27, MICH.

When Ordering Always  
give "item" number; this  
will help prevent error.  
Write for catalog.

**Sling Chain Info.:** Information on Sling Chains as small as  $\frac{1}{4}$ " or as large as  $1\frac{1}{4}$ ", with sling, grab, foundry or special hooks, may be had from American Chain & Cable Co.

Circle 4 on Reader Service Card

**Gripper Slings:** Woven wire slings in standard lengths and widths, with capacities up to 100,000 lbs. are described in booklet "The Gripper Sling", by the Cambridge Wire Cloth Co.

Circle 29 on Reader Service Card

**Gummed Tape Dispenser:** Exclusive "moisture-control" system maintains maximum high level on Derby Sealer for shipping room and production line packaging. Details provided if desired.

Circle 41 on Reader Service Card

**On The Spot Weighing:** Portable, weather-proof, dust-proof Weight Indicator in 8 capacities manufactured by W. C. Dillon & Co. Illustrated, descriptive literature available.

Circle 44 on Reader Service Card

**Storage Batteries:** New TH Industrial Truck Battery is claimed by Electric Storage Battery Co. to give 20% more capacity in same space. Titled the "Thrifty Hauler", descriptive brochure points out features.

Circle 47 on Reader Service Card

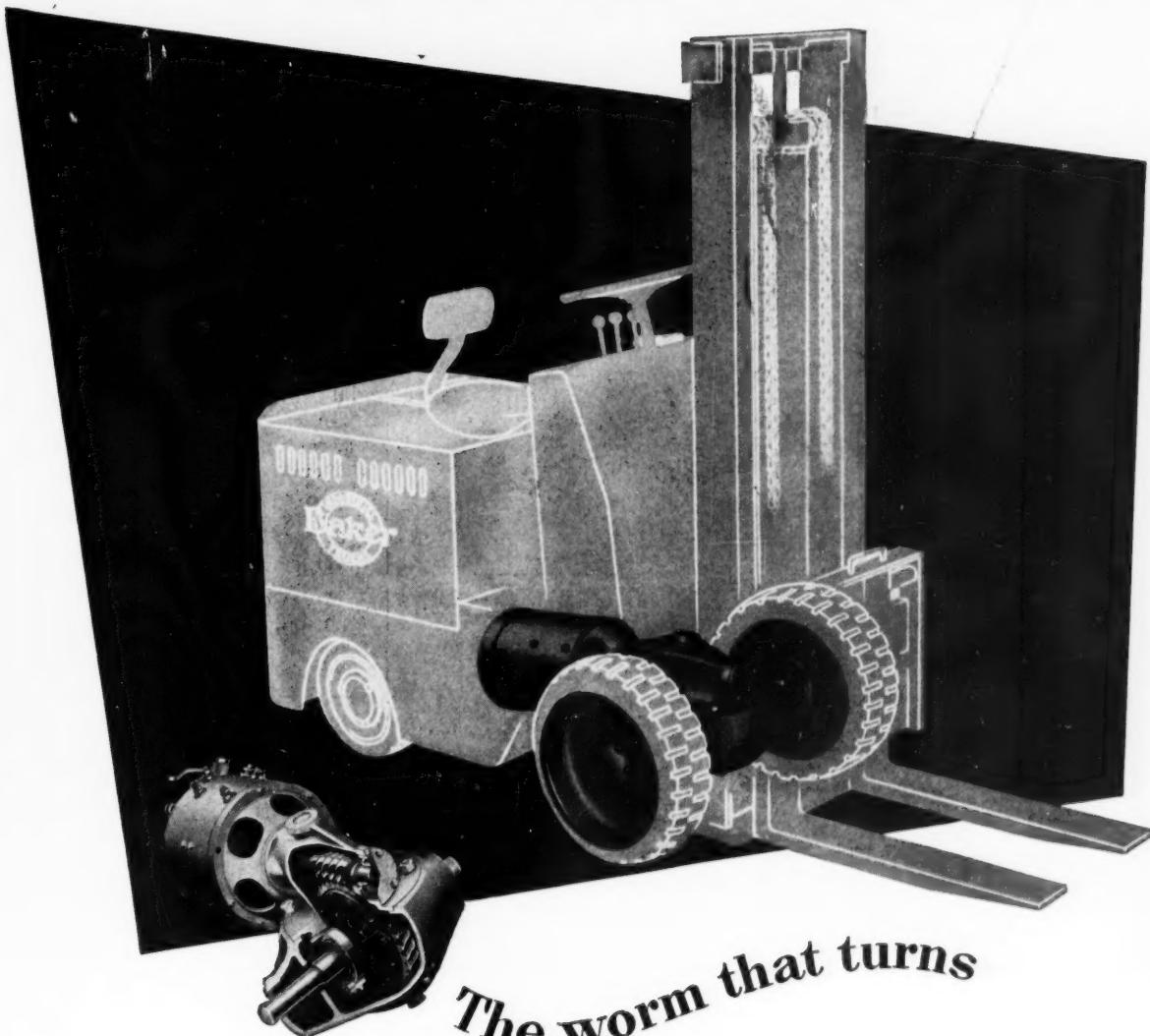
**Tire & Wheel Analysis:** Three free booklets are being offered by B. F. Goodrich Co. This manufacturer claims ability to cut tire maintenance costs 20% or more.

Circle 62 on Reader Service Card

**Hydraulic Pallet Truck:** Versatility is the key note of the hand pallet truck manufactured by OMIC, Ltd., London, England. Truck is easily maneuvered for maximum space utilization. Further data may be had.

Circle 106 on Reader Service Card

← Circle No. 87 on Reader Service Card



*The worm that turns*  
**...with ever-increasing efficiency**

Baker Industrial Trucks use worm gearing in their drive axles, and here's why:

Industrial truck drive systems are called on for punishing, heavy-duty service. Truck operation is comparable to driving an overloaded auto constantly in low gear. Industrial truck transmissions change speed or direction as often as 1800 times during an eight-hour day.

The necessary gear reduction from motor shaft to drive wheels can be accomplished in several ways. The two most common are a gear train of two or more steps with spur or bevel gears, or single-step worm gearing.

The first means more moving parts, more maintenance, and compounded friction losses for each successive step-down. Development of the highly

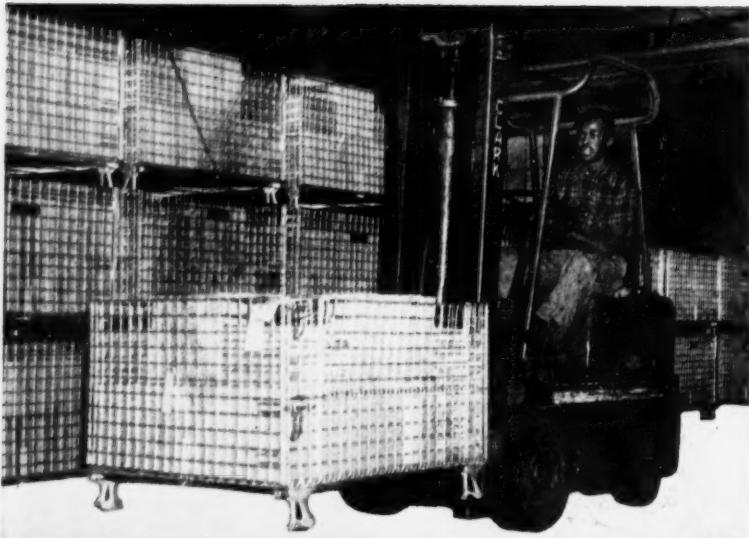
efficient involute worms, new lubricants and new tooth profiles, on the other hand, produce worm gearing efficiencies up to 92%—with fewer components.

One more point: Worm gearing actually increases efficiency with wear since the worm continuously regenerates the "ideal" tooth profile on the worm wheel. In spur or bevel gearing, efficiency declines progressively as teeth wear and lost motion develops.

For more detailed information on Baker Fork Truck features, write for 4-color sketch book—Bulletin 64. The BAKER-RAULANG Company, 1219 West 80th Street, Cleveland 2, Ohio.

**Baker**  
 INDUSTRIAL TRUCKS

Circle No. 158 on Reader Service Card for more information



# PALLETRAINERS



## PROBLEM SOLVERS

**GOT PRODUCTION LINE TROUBLES?** Cluttered aisles? Uneven work flow? Palletainers may solve your problem. Natural receptacles for stampings, forgings or finished parts, they can be moved quick 'n easy from one work point to the next. And to the next and the next! Reinforced steel rod construction is virtually indestructible. Unusually fine protection for loads to 6000 lbs.

**STORAGE SPACE YOUR HEADACHE?** Palletainers can really help you there. New design of extra-strong malleable cast legs provides 8-way entry for fork trucks... assures solid, totter-free grip on unit below. You can stack 'em to the rafters in safety, yet see the contents at a glance. "Warehouse Palletainer" model has hinged front, can be emptied while at bottom of stack!

**SHIPPING IMPORTANT TO YOU?** That wonderful Palletainer construction eliminates all damage in transit under normal conditions. New locking device holds sides securely, regardless of load, cannot be released accidentally or lost in shipment. Light weight of unit holds freight costs 'way down and empty Palletainers fold to 1/4 space for further savings on return trips.

**WHATEVER YOUR HANDLING PROBLEM** let us show you how economically you can solve it with Palletainers. No obligation of any kind . . . write, wire or call us today.



**UNION STEEL PRODUCTS  
COMPANY ALBION, MICHIGAN**

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66



• Six new directors for the national SIPMHE organization were chosen recently at a meeting of the national officers in Chicago. Among three new regional directors appointed were—eastern, Frank W. Green, industrial consultant, Springfield, Mass.; central, A. M. Lownsbury, Railway Warehouses Inc., Cleveland; western, C. L. Lippman, U.S. Steel Co., San Francisco. The other three new directors are Dean H. C. Rountree of Temple University; P. O. Vogt of General Electric, Schenectady, recently retired as chairman of the board of SIPMHE; and J. L. Ware, American Excelsior Co., Chicago.

• Another company has been added to the growing list of industrial firms contributing to the support of the Wayne University Material Management Center. Shown here is E. A. Skae (left) president of Equipment Mfg. Co., presenting his



company's check for \$3000. to C. C. Whiteford, manager of transportation for the Ford Motor Co. and chairman of the Management Center's industrial planning committee for development. Skae, whose firm manufactures racks and other types of material handling storage equipment, made the pres-

**FLOW • FEBRUARY, 1954**  
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# *Here's Big News for YOU!....*



## *Announcing* **MICHIGAN** **TRACTOR SHOVELS**

*... from engine to tires Power Transmission  
engineered and manufactured by Clark*

Faster, heavier, with more horsepower than any tractor shovels of comparable capacity, MICHIGAN\* Tractor Shovels will move material faster, last longer, cost less to operate.

**Clark Torque Converter**

**Clark Power-Shift Transmission**

**Clark Planetary-Wheel Axles**

**Hydraulic Steering Booster**

**Low Level Bucket Tip-Back**

**Short Turning Radius**

**High Tractive Ability**

**Four Speeds Forward**

**Four Speeds Reverse**

**Lights—Standard Equipment**

**Double-Acting Lifting and  
Dumping Cylinders**

**Gasoline or Diesel Engine**

\*Trademark of Clark Equipment Company

### **SIX MODELS ... TO FIT EVERY NEED**

**Model 12-B—15 cu. ft.....bucket drive, rear steer**

**Model 75-B—1 cu. yd.....bucket drive, rear steer**

**Model 75-R—1 cu. yd.....rear drive, bucket steer**

**Model 75-A—1 cu. yd.. all-wheel drive, rear steer**

**Model 125-A—1½ cu. yd.. all-wheel drive, rear steer**

**Model 175-A—2½ cu. yd.. all-wheel drive, rear steer**

For full information concerning these important new machines, send for the MICHIGAN Tractor Shovel FACT-FOLIO—a handy file of specifications and action photographs. The coupon will bring your copy.

**CLARK  
EQUIPMENT**

**CLARK EQUIPMENT COMPANY  
Construction Machinery Division  
440, Second Street  
Benton Harbor, Michigan, U.S.A.**

Please send the MICHIGAN Tractor-Shovel FACT-FOLIO:

Name\_\_\_\_\_ Title\_\_\_\_\_

Firm Name\_\_\_\_\_

Address\_\_\_\_\_

City\_\_\_\_\_ Zone\_\_\_\_\_ State\_\_\_\_\_

STUEBING DESIGNED • STUEBING ENGINEERED • STUEBING BUILT

## Hydrolectric LIFT TRUCKS



EXCLUSIVE

### HEART OF THE Hydroelectric THE DYN-A-DUAL POWER UNIT

This sturdy Dyna-Dual Power Unit out performs all others for ease of operation—dependability—lowest maintenance cost and economy of power.

HydroElectrics will keep rolling and moving your materials at lower costs than any truck in its class. Want proof? Complete facts and data on request.

Note: The Dyna-Dual Power Unit is interchangeable on all models.



2423-31 SPRING GROVE AVE.  
CINCINNATI 14, OHIO

**LIFT TRUCKS**  
INCORPORATED



There is a model for every purpose to handle any kind of material

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## ASSOCIATIONS

*Continued*

entation at a recent Material Management Center meeting. Whiteford delivered a special lecture at the meeting on master transportation problems.

• The newly formed Boston chapter of SIPMHE has embarked on a unique program of member training. Since the November meeting a course of self-education in all phases of industrial packaging and material handling has been underway. Panel discussions around various topics are planned for each meeting. The group has covered corrugated containers, Rule 41 and closures, thusfar, and is planning future discussions on adhesives, testing and cushioning.

• Fixed and variable speed conveyor drives and their controls will be the topic of discussion when the Detroit chapter of the Society of Mechanical Engineers meets February 2nd.

• The Magnesium Association announced recently the appointment of Jerry Singleton as its executive secretary. The announcement was made by James Kirkpatrick, president of the association and vice president of Brooks & Perkins, Inc. Singleton has established his headquarters in the association's offices at 122 East 42nd St., New York City. For the past three years Singleton has been executive secretary of the Advertising Typographers Association and for a number of years had been assistant manager of the Pressed Metal Institute.

• The second Workshop Seminar recently conducted by the Montreal chapter of the AMHS

*(Continued on page 136)*

# Here's how a public utility **SOLVED** its truck-loading problem with a GLOBE self-leveling ramp

Here's a *real* problem in materials handling! The shipping-room floor of the new Utilization building of Iroquois Gas Corporation, West Seneca, N. Y., is above the level of the paved driveway outside. There is no outside loading wharf. "Muscling" heavy loads between shipping room and trucks and trailers would cost too much in time and money, and increase the risk of injury to workers.

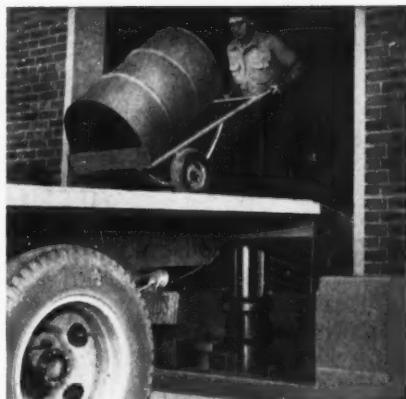
Iroquois Gas licked the problem with a standard Globe type C-68E self-contained, self-leveling Ramp.

This Globe Ramp provides a safe hydraulically-powered platform that speeds the loading and unloading of trucks. When not in use, the Ramp is lowered and the overhead door brought down to close the entrance completely.

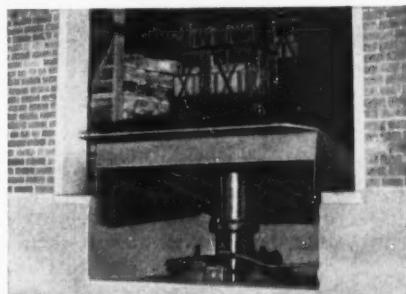
This installation is just one example of the many problems of lifting, loading, positioning, and materials handling solved by GLOBE OILIFTS®. Use the coupon to get additional data.



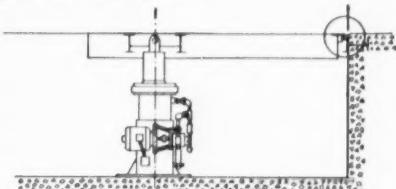
Outside entrance to shipping room, Utilization building, Iroquois Gas Corporation, West Seneca, New York.



The 14" lip of the Ramp rests on truck bed. Loaded hand trucks are rolled onto the truck quickly and safely. Ramp "rides" with the truck bed, rising or lowering as the truck springs flex under changing load. Roll-over capacity is 16,000 pounds.



Close-up of Globe Ramp in "up" position. No ground excavation was needed for the oil-hydraulic cylinder which powers this Ramp. Power cylinder, electric-motor oil pump, oil reservoir are a single integral unit, resting on a gusseted base plate.



This diagram shows typical Globe Self-Leveling Ramp installation.



GLOBE HOIST COMPANY

1000 E. Mermaid Lane, Philadelphia 18, Pa.

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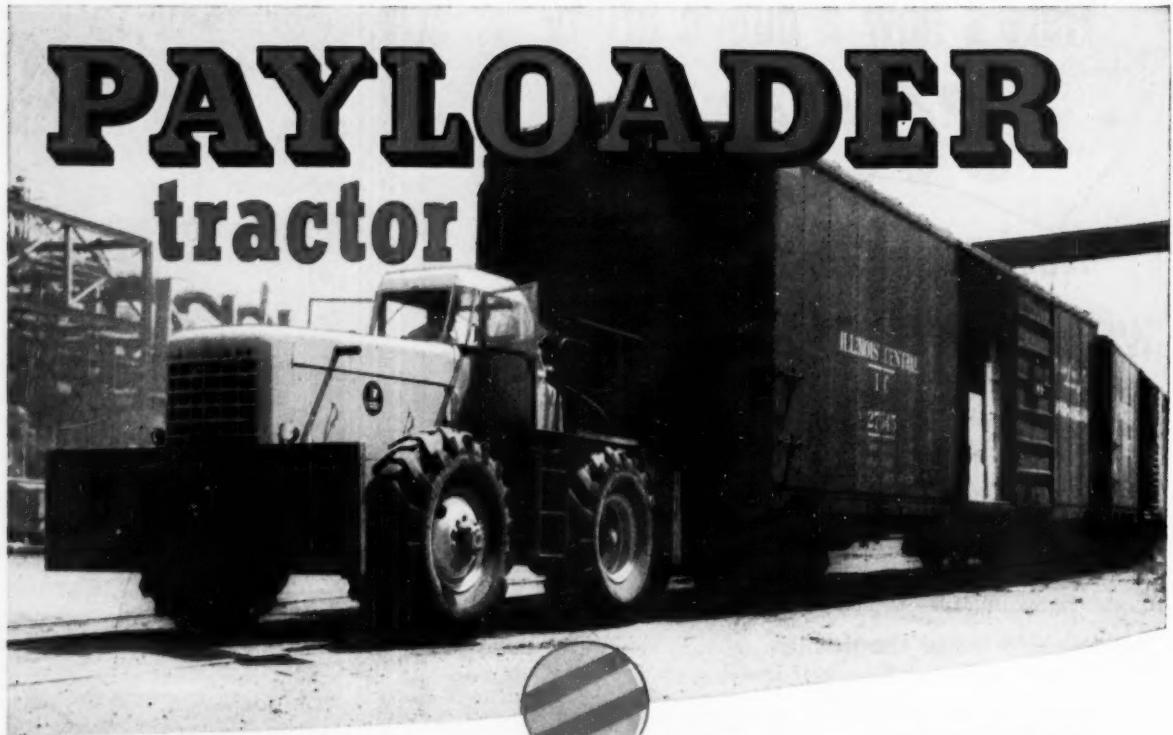
Globe Hoist Company F-608  
1000 E. Mermaid Lane, Philadelphia 18, Pa.  
Please send me additional information on  
Globe OILIFTS.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



## **PAYLOADER** tractor

**switches up to 16 loaded cars at GLF Mills**

Grange League Federation wanted to improve car-moving operations at their Port of Albany mills. Up to 16 loaded cars of grain at a time had to be moved to and spotted at the dumping pits . . . empties had to be returned to sidings and spurs.

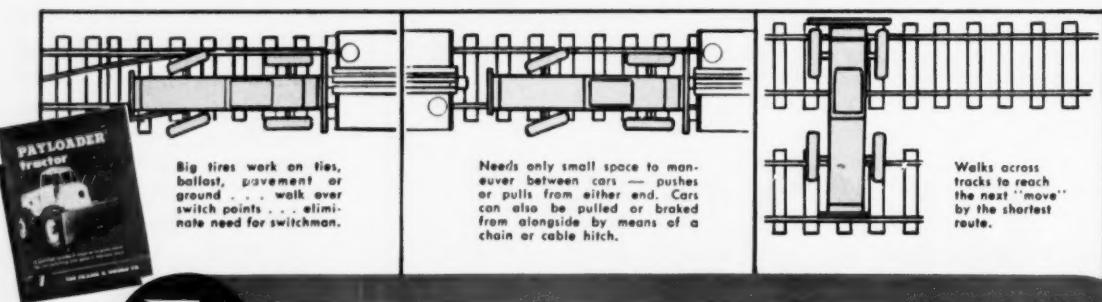
They chose a Model TM "PAYLOADER" Tractor — and are glad of it. It gets the job done faster, cheaper and safer than the Diesel switch engine formerly used. Two men instead of three now handle the job, faster . . . and the greater visibility, plus ease of control, have reduced accidents.

Superintendent John Burke says, "We are more than pleased with the performance of our Hough "PAYLOADER" Tractor. It's got all the

power it needs and minimizes the danger connected with this kind of work".

Charles Ebel, operator, says, "The Hough TM is a fine machine to operate. I can easily see what I'm doing and can readily hear my brakeman's voice above the motor noise."

This big 4 wheel drive "PAYLOADER" Tractor is making equally successful records in other yards. Its 100 "horses" are efficiently harnessed and easily controlled by torque converter drive, 4-speed, full-reversing transmission, and power steering. Available with gasoline or diesel power. Your nearby Hough Distributor will gladly give you the full details, or write The Frank G. Hough Co., 945 Sunnyside Ave., Libertyville, Illinois.



Write for full information on this Powerful, Versatile tractor and the name of the nearby "PAYLOADER" Distributor.



# **PAYLOADER®**

THE FRANK G. HOUGH CO.

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## what the purchasing agent should know about **Portable Conveyors**

Here are pointers and picture examples to help a buyer select equipment that will be kept in most continuous use and fit best into an overall handling system for his firm.

**D**OLLAR FOR DOLLAR, lightweight, portable conveyors are among the most versatile of the money- and back-saving material handling aids available. Because they usually replace highly expensive hand operations, and because their cost is generally low, these units can pay for themselves quickly—often in a few weeks or days.

How fast an investment in such equipment can be returned largely depends upon how well it is utilized.

And the key to full utilization lies in taking advantage of the prime characteristic of the equipment itself—portability. Properly selected, a portable conveyor, or system, will do an almost unlimited number of jobs inside and outside a plant. Because a purchasing agent or other buyer may have—or may ask for—a more comprehensive view of a total operation than that available to the head of a requesting department, he

(*More on next page*)



UPPER STORY reached, when no elevator available, by wire belt conveyor shown in permanent installation but made portable by attaching axle and wheels.



BULK HANDLING with portable belt conveyor which delivers material to mixer. Block and tackle, left, raises hopper end out of way when conveyor not in use.

## Portable Conveyors . . . Con't.

may be able to advise on a type and capacity of equipment that will offer the greatest potential use.

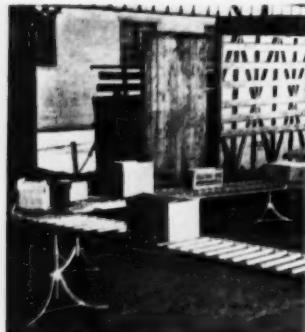
The buyer should be able to inform his supplier fully on the characteristics of materials to be handled—sizes, weights, shapes, durability; rate of handling required; characteristics of building yard, or dock; distances material will be moved; heights; storage

conditions; number of hours per given period the equipment will be in use; and the like.

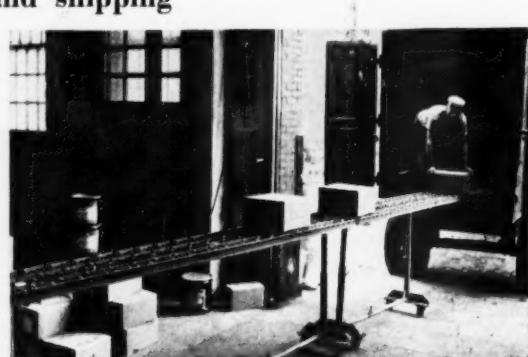
As to capacity, the purchasing agent should be fully informed as to the distributed load and unit load maximums set by a manufacturer. Generally, equipment intended to handle lighter weights provides maximum versatility and portability: when high capacity is required, it may be necessary to buy heavier equipment even at the sacrifice of mobility.

Don't send a boy to do a man's job. A conveyor with a distributed load capacity of, say, 400 pounds

### for receiving and shipping



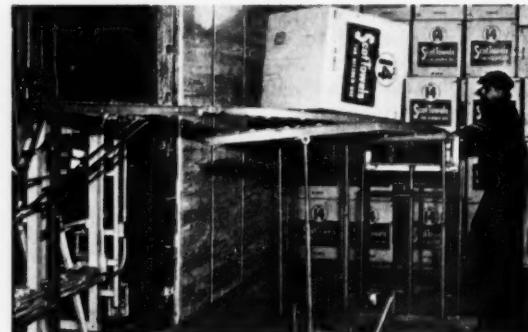
LEFT: Roller sections set up to load highway truck.  
RIGHT: Telescoping belt retracts as van fills.



SUBSTITUTING for dock of paint distributor is mobile wheel system for fast loading and unloading.



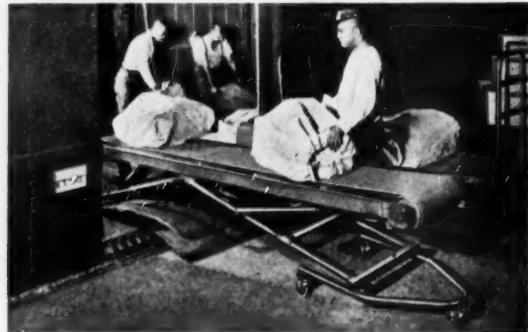
FLAT BELT type, electrically operated conveyor in typical installation loading coal into truck.



PIVOTING curve in telescoping wheel system allows both ends of carrier to be filled with same equipment.



FLOOR LOCKS of portable line stand quickly disengage to allow conveyor to be moved to next truck.

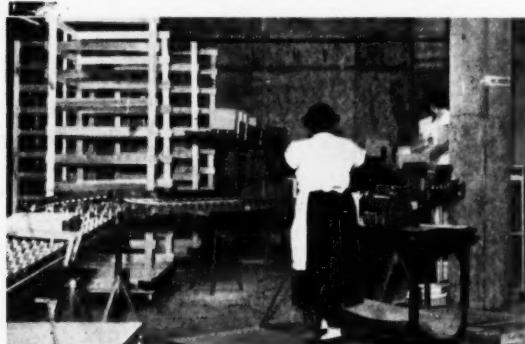


HYDRAULIC jacks raise either end of belt for loading or unloading freight, baggage cars or trucks.

may be called upon consistently to handle a load of 600 pounds. It will probably do the job for a while, but it is highly probable that maintenance costs will soon eat up any savings realized on the initial purchase.

One of the most fertile fields of savings is in the use of portable conveyors for in-plant production operations. And here one of the latest concepts in handling is being applied to an increasing degree. It is the bringing of the conveyor to the worker—or to the work area—rather than the converse. This is shown in

### handling in production



INTEGRATED into handling system, portable roller sections cut cost for church bulletin publishing firm.



MOBILE roller sections set up to speed handling in a laundry; can be quickly moved to serve other areas.



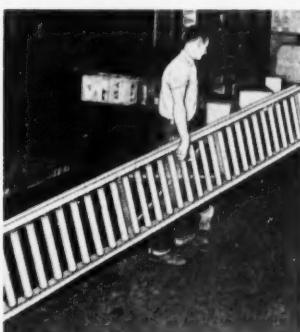
ROLLED to locations as required, packaging conveyor gives high flexibility to pharmaceutical plant.

a number of the illustrations. In a church bulletin publishing house, for example, portable gravity conveyors mounted on adjustable, portable tripod stands have helped to reduce labor costs considerably. (This is also a fine example of the integration of portable conveyors with other types of handling equipment.) Floor truck loads of empty cartons are placed at the beginning of the conveyor line. Cartons are conveyed through stations where they are filled with the required number of bulletins and are then sealed and stored on pallets alongside the conveyor. As each aisle is filled up, the conveyor is moved. Stops are used on the conveyor to cut the distance an operator must walk to fill pallets. When orders are to be shipped, floor trucks with filled cartons are positioned at the end of the conveyor. As cartons travel by gravity through the conveyor line (stops removed), labels and postage are attached, and the packages travel by floor-to-floor conveyor to the loading platform.

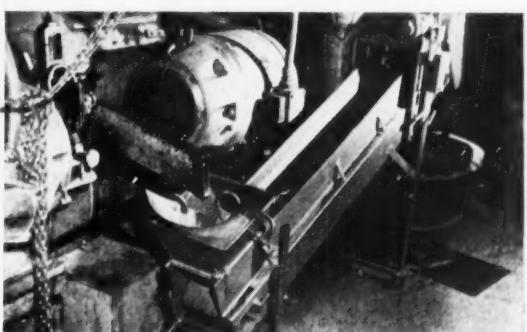
### Two Types of Portables

Gravity wheel, gravity roller and powered (gas or electric) belt conveyors are widely used in many industries. Sections of wheel and roller units are usually made in standard lengths up to 10 feet for easy, one-man moving. There are two styles—"carry" type, which usually rests on supports without wheels or casters; and "mobile", which are mounted on wheels or casters.

(More on next page)



LEFT: Magnesium section easy for one man to carry.  
RIGHT: Fully adjustable units allow high flexibility.



SMALL belt conveyor boosts castings from grinder into drum in tight space. Easily moved between machines.

## Portable Conveyors . . . Con't.

It is often possible to secure either type for semi-permanent operations when extended use in one location is desired. Each will carry loads of widths less than its outside dimensions—with channel frames aiding as guard rails—or of widths greater than the conveyor width—when wheels or rollers extended above channels and with supplementary guard rails if desired.

### handling between levels

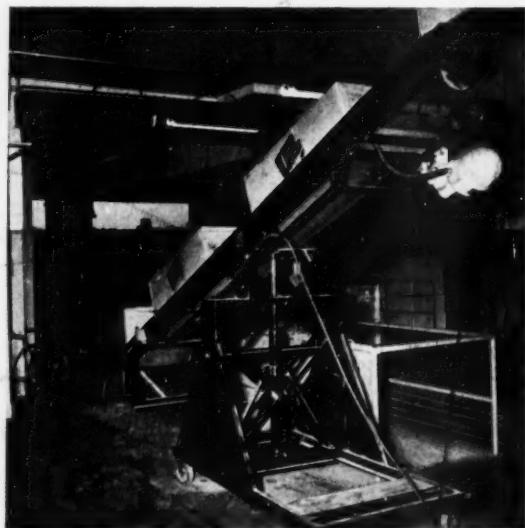


NO STRAIN on stairs as belt handles cartons from basement to first floor. Wheel sections serve both ends.

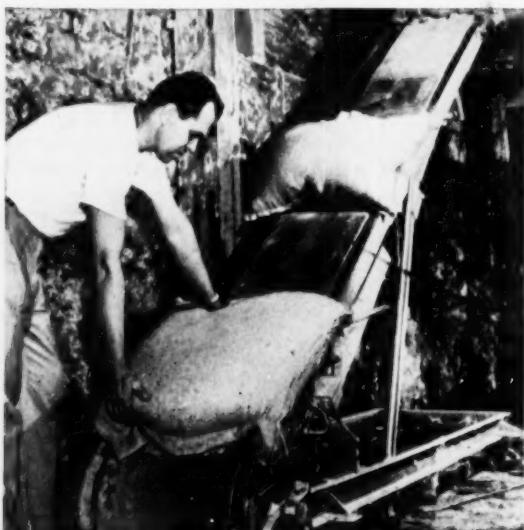
Aluminum and magnesium constructions are offered for use where lightness of weight is a prime factor and the higher capacity of steel is not required.

Curves, switches, spurs and "reverses" can be used to arrange (and rearrange) conveyorized operations wherever desired. Reversing sections provide means to switch direction of travel 180 deg.

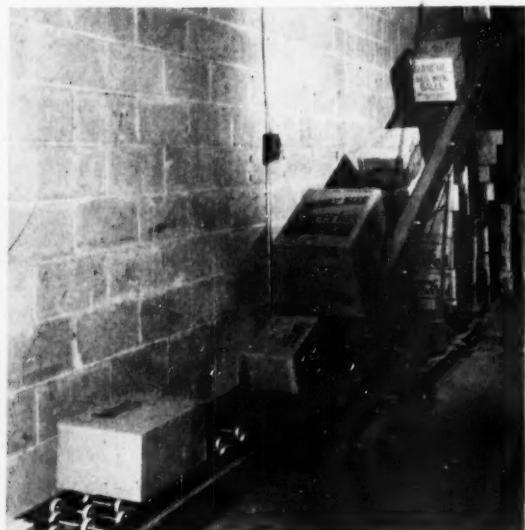
Standard widths of portable wheel and roller units run from eight to 36 inches. (It is possible to arrange for narrower or wider widths, but the information here pertains to standard "shelf" items, which can be delivered without delay.) Both wheel and roller conveyors may be obtained in telescoping designs which



WHEEL MOUNTED, portable belt conveyor adjusts for height and angle of incline between levels.



EASILY STORED, belt unit folds in half when out of use. Elevates by power, has removable rubber cleats.



DOUBLE DUTY belt conveyor receives from trucks directly to basement storage or up to first floor sales.

allow continually variable lengths—a valuable characteristic particularly in warehousing, loading or unloading freight cars or highway trailers.

Belt conveyors handle an almost unlimited number of load types. In addition to regularly shaped packages and bags, for which they are widely employed, they carry irregular objects and bulk materials. They also work on elevations up or down so that they serve for handling between levels or floors; stacking; and for carrier loading or unloading, with or without

docks. The latter has been of particular value to companies having difficult or no carrier loading facilities.

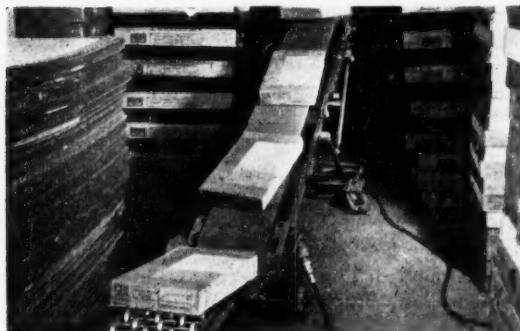
Portable belt conveyors, too, come in telescopic designs, and widths may vary from eight to 24 inches, or occasionally wider.

Portable flight conveyors are used for handling all sorts of non-abrasive bulk materials.

Portable bucket conveyors handle all types of bulk, principally in loading trucks and rail cars.

(Continued on page 128)

### warehousing, stacking and piling



LARGE, heavy building supplies are efficiently piled in warehouse of dealer with minimum of manual effort.



TELESCOPING belt conveyor is loaded by spiral chute (right) in warehouse of feed manufacturing plant.



ONE MAN stockpiles bagged lime where, without conveyors, four men were formerly needed for the job.



ALUMINUM belt conveyor boosts heavy wooden cases from a wheel conveyor line to the stacker.



SWIVEL-WHEEL truck of portable belt allows several piles to be stored in semi-circular arrangement.



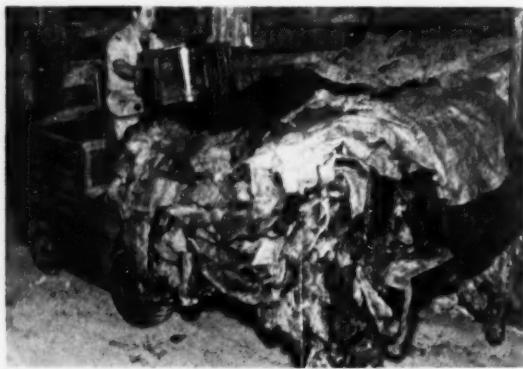
BULKY wall board and other building materials are warehoused quickly, efficiently by portable wheel units.

# Rebuild The Plant— or Revise The Handling?

If this is a choice your firm may be called upon to make, it will be worth your while to see how a 100-year-old company has made a profit-wise decision.

A LARGE MANUFACTURER of industrial leather products recently faced a difficult situation. Production costs were rising, and a major contributing cause was antiquated material handling. The company had two possible courses—build a new plant or stay where they were and modernize the old one.

The second possibility was complicated by two factors. First, the plant was built in gradual stages over a period of 100 years, and not as an integrated



POWER TRUCK moves skid load of hides from Hide Cellar to Beam House, an operation previously performed by a chainfall on a rail, a cart and muscles.

unit. Second, leather manufacturing necessitates fixed equipment, like tanning pits, prohibiting wholesale re-alinement.

In spite of these complications, the hundred year old Graton & Knight Company decided to stay in its Worcester, Massachusetts, plant and lick these problems with an intensive modernization program aimed at bringing down the overall cost of production.

The first step was an analysis of material handling, from green hide to finished products—transmission belting, textile leathers, pneumatic and hydraulic packings, and miscellaneous fabricated leather products.

One of the early moves was the relocation of departments. This made possible redirected lineal transportation, which eliminated excessive elevator traffic, made use of ramps and bridges, and placed depart-

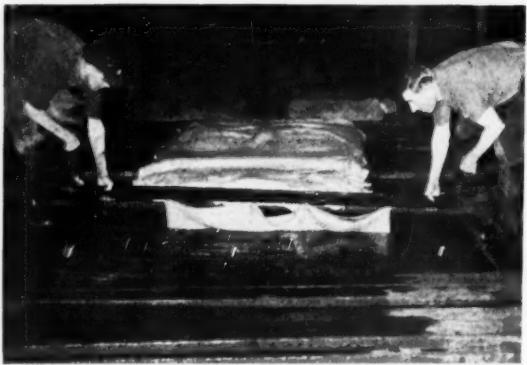
ments dependent on each other at the same levels.

Considerable savings were realized from this reorganization of material flow. Whereas flat leather belting used to travel 5,400 feet from green hide to a roll of belting, it now moved 2,800 feet. Finished whole steer bellies which used to travel 6,800 feet took only 2,900 feet.

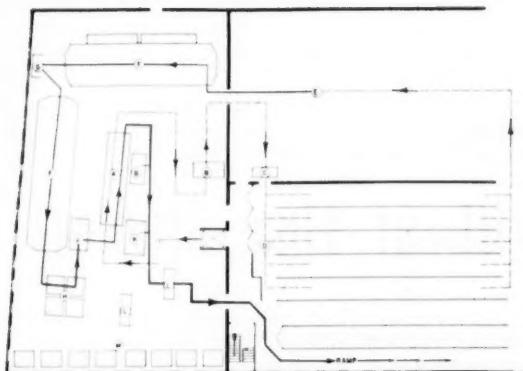
Material handling equipment improvement was started down in the Hide Cellar. Here a conveyor was installed to move green hides from box car into the section where they are stored under controlled conditions of temperature (55-60° F.) and humidity (80-83%). When hides are requisitioned from this cellar, they are spread out on a flat skid, swept clean of salt and dirt, and have their heads cropped off. The hides are then moved into the Beam House by power truck.

In the Beam House, where the hair and excess fat are soaked and scraped off the hides, up-to-date material handling methods have been used in three operations—reeling through lime pits, disposing of fleshings and transportation to next station.

First, the hides are toggled together and dipped by a movable reeling device into seven successive lime pits (one day in each) and a rinsing pit. They then pass through unhairing and fleshing machines and are deposited on a flat skid, which is transferred by



BEFORE: In old method of handling at tanning pits, each hide was individually lowered by two men. This was time consuming and pit load was only 70 pieces.



**MODERNIZED FLOW arrangement on the Cement Floor. For description of keyed details, see text.**

truck to the White Table for inspection and cropping.

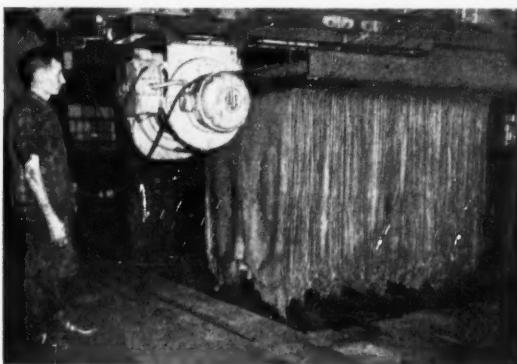
Disposal of the excess fleshes, previously a problem, is now handled by a system of large buckets which are filled during operations. These are loaded on flat cars by electric hoists on a monorail system and the result is a considerable saving of time and labor.

After cropping, hides are simply slid down a chute from the White Table into paddle wheels in the Tannery Basement. Here, the most marked improvement has been made in the handling of hides.

The old method called for piling hides into a huge bucket, which was hauled into the Tanyard. Hides were then individually nailed onto sticks and lowered into the appropriate pits.

The new method consists of hanging hides on sticks with permanent nails. Hides are then placed on a rack which runs overhead. A special hide carrier, driven by an electric hoist, picks up all the hides (one full pit load) at once and is then transferred by electric monotractor along a monorail to the appropriate pit into which the hides are lowered. In addition to direct handling benefits this new method also increases pit capacity from 70 to 100 pieces.

When hides are lifted out of the tanning pits, they are transported to the Cement Floor where they are scrubbed, bleached, oiled and hung to dry. The old



**AFTER:** In new system, one man with electric monotractor can move rack load for full pit easier and faster. Pit capacity has increased to 100 pieces.

method of moving them involved a good deal of waste motion and hand carting due to an awkward arrangement of processing units. A new arrangement takes the tanned hides up to this area by elevator and then through various stages by monorail as shown in the flow plan. First the tanned hides are run through the Bleach Unit (A), where they are bleached by soda-acid process to clean the grain and then partly dried in the Wringer (B). Following this, hides are passed through the Oiling Machine (C) where they are oiled to protect the grain during drying. Hides are then hung to dry on conveyors which carry them through the Tubes (D), a 4 to 7 day process. After this they are sorted and stored (100 hides to the pallet) in room (E).

When a group of hides is selected for the next phase of manufacture, they are preheated by conveyor through the No. 1 Hot Box (F) after which they are "stuffed" with natural oils at the Spray Booth (G). The conveyor then carries them through the No. 2 Hot Box where oils are baked in. A bath in the Water Tanks (H) is followed by the Scourer (J). Then hides



**PALLETIZED storage of rough leather, with stacking three loads high, provided for utilization of 50 percent more storage space than before reorganization.**

take another trip through the Bleach Unit (A) and Wringer (B). After a treatment in the Vaughn Set (K) and, in some cases, a further process through the splitter (L), the hides are taken by power trucks up ramps to the third floor, where they are oiled and stretched.

All the hides that are run through the above sequence are destined for belting, packings and other industrial uses where the top quality of leather is required. Other parts, such as bellies and shoulders, are tanned in the Drum Wheels (M), put through some of the above processes, and stored for future fabrication into products that do not require the tensile strength of belting and packings.

After the currying process of stuffing and stretching, power trucks take the leather to various departments where it is fabricated into various products.

Finished products are then carried by power trucks down ramps and elevators, along well planned routes to the supply or shipping rooms, where parts are packaged and moved by conveyor to the loading platform. Here, a motorized fork truck carries palletized loads directly onto trailer trucks.

## How to Establish Material Handling

# Incentive Standards Without Time Studies

**Two examples show how Alcoa has found the work sampling technique a quicker, easier way to analyze jobs and provide added incentives to service forces.**

By L. E. Gaylord and C. R. Gillespie,  
Industrial Engineers, Aluminum Co. of America

**A**RE YOU HAVING TROUBLE with incentive plans on jobs like Material Handling—those that are of the indirect labor or service type within the plant and office? Trucking, receiving and stores, shipping, crane work and clerical work of all kinds would fall under these general headings. These non-repetitive types of jobs have, in the past, been almost impossible to put on an incentive basis.

Aluminum Company of America has been experimenting with the comparatively new "Ratio-Delay" or "Work Sampling" methods to set incentive standards within these fields. On the basis of two completed tests, it has been our experience that this new method answers some of the problems that have existed within this field.

It has been found that the work sampling technique is a quicker, easier way to analyze jobs in broad, general terms. Also, it is believed that this method will give added incentives to those service forces that heretofore were left out when the incentive dollars were being passed around.

The work sampling has at least four advantages over the older time study method of setting standards:

1. It does not demand an observer's full time during the day. When completed, the study has almost summarized itself. Clerical time is thereby much less than is required by time study.
2. When studying jobs involving more than one worker, one observer can record readings for all the men in the crew. It would take two or more time study men to get a good job picture.
3. It gives a more accurate picture of the job because it cannot be "padded." It should be noted that some of the service jobs can be very misleading, even to the most experienced observer, as to what is and what is not necessary work.
4. It relieves the man on the job of the often distasteful ordeal of "being timed" for long periods.

It must be pointed out that work sampling has one distinct disadvantage. It is almost impossible to apply

any performance rating to the observations. This has not been a serious drawback, however, because of the type of job selected. The work load varies to such an extent within the jobs selected that performance is usually good during working time.

Briefly, the work sampling method is the taking of a large number of random observations. From these observations, the percentage number of readings that record the machine or operation as working will tend to equal the percentage time it is actually in that state.

It is believed that this method, when properly applied, will produce an incentive standard on certain types of jobs which will be more easily established, more easily checked, and more precise, than a plan produced by the conventional series of eight-hour time studies.

### Results Close to Statistical Study

The two jobs checked with the work sample method by Alcoa were that of ladle fillers and die assemblers. During the period the observations were being made on the ladle fillers, one all-day stopwatch (time) study was made for comparison.

Although one such study would not be truly representative, the results were surprisingly close to the statistical study. (See Table II.)

Here is how the ladle fillers study worked out. The ladle filler is a service man who keeps the casting units supplied with full ladles of molten aluminum. He fills the ladles from the furnaces, fluxes the molten metal to remove impurities, and directs the crane movement of ladles to the casting units.

There are factors, beyond the ladle filler's control, which influence the amount of time he must spend on each ladle. Some of these factors are: (1) temporary storage of a ladle; (2) necessity for adding alloys to the molten metal in some ladles; (3) necessity for double fluxing some ladles; and (4) varying distances between furnaces, casting units and storage

<b>Period over which random observations made—40 shifts.</b>
<b>Man-hours on ladle filling job over the period =</b>
40 shifts $\times$ 8 hours per shift $\times$ 2 men = 640
Number of observations in recurring allowable group = 363
Number of observations in non-recurring allowable group = 109
Number of observations in non-allowable group = 328
Total observations = 800
Total ladies = 499
<b>Allowed time for basic cycle =</b>
363 observations $\times$ 640 man-hours = 290 man-hours
<b>Percentage allowance for non-recurring elements =</b>
800 observations $\times$ 100% = 30%
<b>Percentage allowance for fatigue time (arbitrarily established in accordance with plant practice) =</b>
5%
<b>Total percentage allowance 30% + 5% =</b>
35%
<b>Total allowed time 290 man-hours + (35% <math>\times</math> 290) =</b>
392 man-hours
<b>Allowed time per ladle</b>
392 man-hours = 0.79 man-hours per ladle
499 ladies
<b>Paid man-hours per shift =</b>
16.0
<b>Man-hours allowed per shift for lunch =</b>
0.5
<b>Man-hours allowed per shift for personal needs =</b>
0.5
<b>Net man-hours per shift available =</b>
15.0
<b>Standard time per ladle</b>
16.0 paid man-hours $\times$ 0.79 man-hours per ladle = 0.84 man-hours per ladle
15.0 available man-hours

Table I

points. Also, two men worked in a team; often one would begin a cycle while the other completed one.

#### Code Number for Job Elements

Before making the observations, the ladle filler job was broken down into a number of specific elements. A code number was assigned to each element. All foreseeable delay and idle time causes were also listed beforehand, and assigned code numbers.

The use of code numbers permitted a small and simple form on which observations were recorded. Ten observations were made per day. After each, a code number was entered in the space provided.

In order to avoid recording the same delay twice in succession, the average interval between observations was made about twice the length of the longest

anticipated delay. In this case, it was believed that no delay would be longer than 25 minutes and observation intervals were made to average 48 minutes. This meant 10 observations in a 480-minute (8-hour day).

The actual clock time for making each observation, however, was determined by picking a series of numbers (each less than 480) from a statistical table of random numbers. These numbers were arranged in ascending order, and each then represented the number of minutes past the shift starting time that an observation was to be made. By using the table of random numbers, it was made certain that it would not be possible to have successive observations coincide with any event which might repeat at regular intervals. A

(More on next page)

Table II

<b>Operation</b>	<b>Percent of Shift</b>	
	<b>Stopwatch Study</b>	<b>Statistical Study</b>
<b>Fill ladies</b>	5%	7% $\pm$ 1.7%
<b>Flux ladies</b>	11%	14% $\pm$ 2.4%
<b>Transport ladies</b>	23%	22% $\pm$ 2.9%
<b>Control temperature</b>	2%	2% $\pm$ 1.0%
<b>Miscellaneous allowable</b>	20%	14% $\pm$ 2.4%
<b>Idle and non-allowable</b>	39%	41% $\pm$ 3.4%
<b>Total</b>	100%	100%

## Operation - Die Assembling

Compiled by - A.A.R.

Workers	4111 - 4348										4111 - 4106											
	No. of Die Changes	41										32										
		Date 9-23-52										9-24-52										
Total No. Occur.	Element	7:17	7:34	7:51	8:05	8:23	9:14	9:38	9:49	10:06	10:15	11:05	11:17	11:36	12:00	12:20	1:28	1:33	2:18	2:36	2:44	
68	Idle	✓✓✓✓		✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
9	Hunt for die	✓✓✓																				
7	Get die from furnace	✓																				
4	Put tools on truck		✓																			
8	Store tools		✓	✓																		
14	Check schedule		✓✓																			
6	Load furnace		✓																			
16	Clean tools (caustic)			✓	✓																	
4	Truck tools to die room				✓																	
2	Open furnace doors						✓															
14	Assemble die							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
4	Talk to supervisor																					

Table III

different series of numbers was picked for each day of observations.

In order that an average cycle time per ladle could be determined, the number of ladles filled each shift was noted on the observation sheet for that shift. After sufficient observations had been made, the elements were grouped into three categories—"recurring allowable," "non-recurring allowable" and "non-allowable."

The total number of observations for the recurring allowable group then was used to determine the allowed time for the basic cycle. To this was added the allowed time for the non-recurring group, expressed as a percentage of the basic cycle time. The final addition of a fatigue allowance, expressed as a percentage of the basic cycle time, gave the total allowed time for all ladles handled. This, divided by the total number of ladles, gave the allowed time per ladle. The number of ladles that could be handled in the 715 hours working time available per shift then became the standard.

In converting from "observations" to "man-hours" to determine the above time values, the underlying principle (that the percentage number of observations which record the ladle filler performing the given element tends to equal the percentage time he is performing it) was applied. Table I shows the entire calculation of standard time.

#### Margin of Error Must Be Decided

Before making the calculation shown in Table I, it should be decided what margin of error is permissible. In the case of the ladle filling job, for example, it was decided that a plus or minus 5 percent would be acceptable. It was also decided that the risk of one chance in twenty that the result might be further

than  $\pm 5$  percent from the true result was acceptable.

In this case, the total observations under the allowable categories amounted to 472 (See Table I). This

472

is  $\frac{472}{300} \times 100 = 59\%$  of the ladle filler's time con-

300

sidered allowable, or productive. The standard error then is  $\sqrt{\frac{p(1-p)}{N}}$

$p = 0.59$  (percent productive time as a decimal)

$N = 300$  (grand total observations)

$$\text{Standard error} = \sqrt{\frac{0.59(1-0.59)}{300}}$$

$$= .017$$

or 1.7%

The true value for the percentage of productive time lies within the limits of  $59\% \pm 1.96 \times \text{Standard Error}$ .  $\pm 1.96 \times 1.7\% = \pm 3.4\%$ . Also it can be stated that the test would be correct 19 times out of 20.

This is within the chosen acceptable limits of  $\pm 5\%$ .

In the second example of the die assemblers some detail has been eliminated to avoid repetition.

Extrusion presses require dies and auxiliary tools through which metal is forced to form a wide variety of desired shapes. These dies and tools must be changed when a change in shape is required. The job of the two die assemblers is to service the extrusion presses with dies and tools at the proper temperature.

The object of this study was to determine how much actual working time (including miscellaneous tasks) was necessary to provide one press with one die change. This would provide a unit of measurement.

The first step was to arbitrarily decide to run a ten-shift study, taking 40 readings per day (20 on

Total number of observations—400  
Number of observations working—314

$$\% \text{ working time} = \frac{314}{400} = 78.5\%$$

$$.785 \times 960 = 765 \text{ man-minutes}$$

765 (working time per shift)

$$30 (\text{average number of die changes per shift}) =$$

25.44 man minutes per change or .425 man-hours per change

To this working time a 10% coordination allowance was added, thus:

$$.425 \times 1.10 = .476 \text{ man-hours per change}$$

Other allowances were added in the following manner:

$$\text{Paid man-hours per shift} =$$

16.0

$$\text{Man-hours allowed per shift for lunch} =$$

.5

$$\text{Man-hours allowed per shift for personal needs} =$$

.5

$$\text{Net man-hours per shift available} =$$

15.0

Standard time per die change:

$$16.0 \text{ paid man-hours}$$

$$\times 467 \text{ man-hours per change} =$$

$$15.0 \text{ available man-hours}$$

$$.499 \text{ man-hours per change}$$

Table IV

each man). Then, using the table of random numbers, an exact time for each of the 20 observations was established. Two readings were taken, one on each man, for every selected random time, since the die assemblers perform their duties independently of each other. All readings were noted mentally by the observer and recorded on the work sheet upon his return to the office.

The code method described in the first example was not used for this application because the number of different elements involved was too great. A segment of the work sheet is shown in Table III.

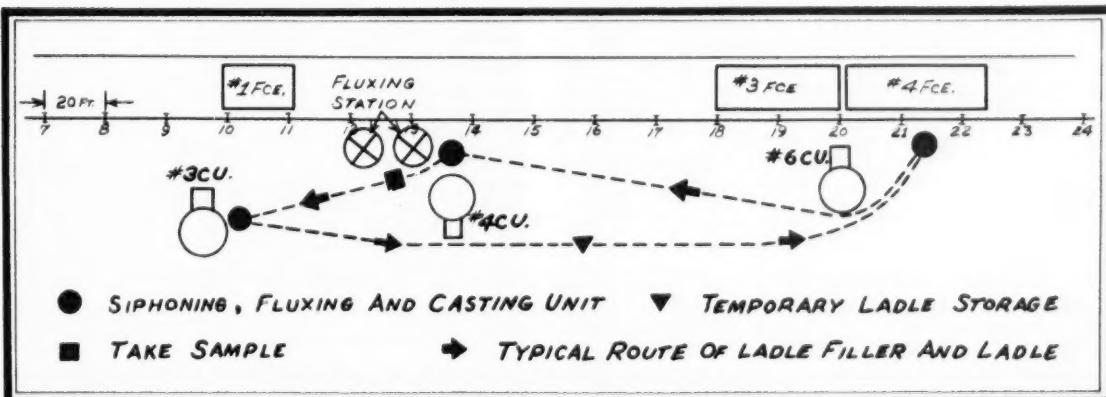
In the recap, which was made directly from the work sheets by totaling the checks for each element, a percentage of working time was established. This percentage was converted to minutes per shift by multiplying it by 960 man-minutes.

The result of the study was checked by the formula

and method described in Example No. 1 to assure desired precision. A record was also kept, from extrusion press time reports, of the number of die changes each press made during the period of the study. The working time per shift was then divided by the average number of die changes per shift to determine the actual working time per die change. The calculations are shown in Table IV.

In these examples, allowances for miscellaneous delays and odd jobs related to the operation have been shown as a lump figure. If it were desired to know the percentage allowance for a particular delay the information would be readily available. It would be necessary only to take the ratio of observations of this delay to the total working time observations. In fact, we have made much use of the sampling technique to determine or revise delay allowances, only, for work cycles already set by time study.

Diagram of ladle filler route.



# More Work for "Walkies"

By Paul Schreck, Vice President,  
The Moto-True Company

**W**HEN PLANNING a material handling system, many companies fail to consider the advantages of hand-guided, motorized trucks—known more commonly as “walkies”.

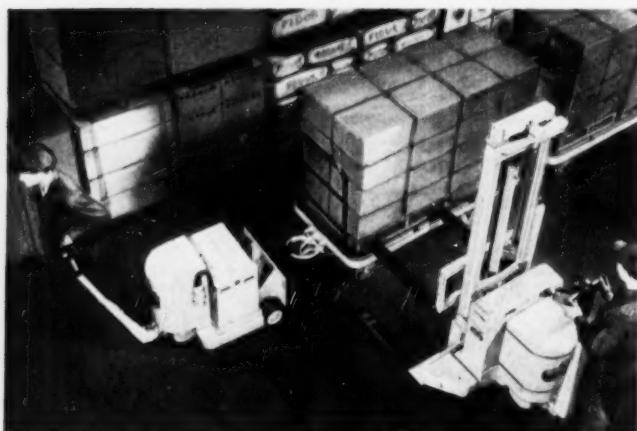
While the walkie is often slighted in favor of larger industrial trucks, it is not designed to compete with these “big brothers”. Rather, it covers an important area where riding-type trucks are unable to operate, or where it is uneconomical to use them.

## Four Basic Types

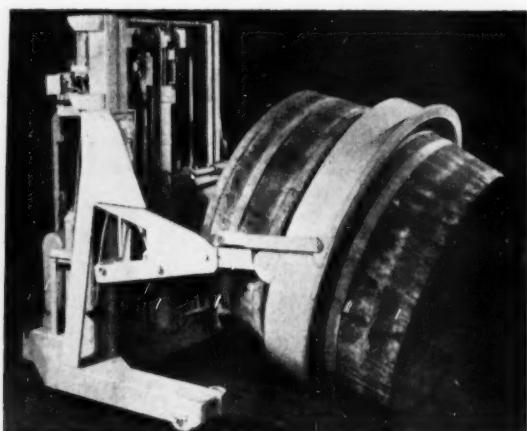
There are essentially four basic models of walkies, although an infinite number have been specially designed for specific handling tasks. The basic types are: (1) the high-lift or stacking model; (2) the low-lift pallet model (equipped with forks); (3) the low-lift skid type (with a platform); and (4) the tractor.

The high-lift or stacking type is available with standard telescoping lifts (reaches as high as 120 inches) and capacities up to 4000 lbs. This type of truck, with outriggers supporting the load, opened a new line of approach. By supporting the load with the outriggers, heavy counterweights and long truck lengths were eliminated. It permitted additional space to be gained. And, in many cases, pay loads were increased because the total weight of maximum load plus the weight of the truck was less than the dead weight of the larger fork truck alone. Such trucks stack either pallet or skid loads, are especially suited to rearranging stacks in storage and handle general stacking requirements.

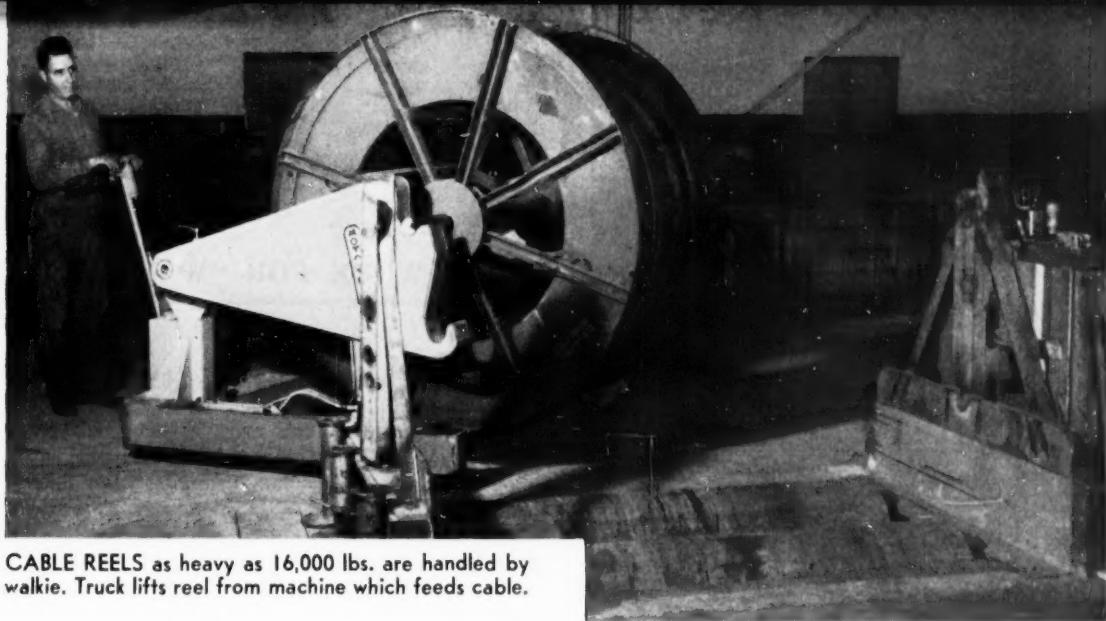
The low-lift pallet walkie is equipped with forks for handling pallet loads. It is designed to lift the load four inches off the floor for ease of travel; it is not intended for stacking. Pallet models are gen-



STACKING WALKIE places pallet loads on trailer train which is pulled through plant by tractor unit.



VATS ARE EASILY HANDLED by this walkie which has attachment for tilting at 45 degree angles.



CABLE REELS as heavy as 16,000 lbs. are handled by walkie. Truck lifts reel from machine which feeds cable.

erally available with capacities from 4000 to 6000 lbs.

The low-lift platform walkie was the first to be introduced. These models have standard lifts of 3½ inches, are equipped with standard platforms to handle skids. As with the pallet truck, their job is to move horizontally only. Capacities: 4,000 to 10,000 lbs.

The most recent standard walkie model is the tractor, which, as the name implies, is used for hauling trains made up of individual floor trucks. Having a minimum draw bar pull of 650 lbs., they are capable of pulling loads in excess of 4000 lbs.

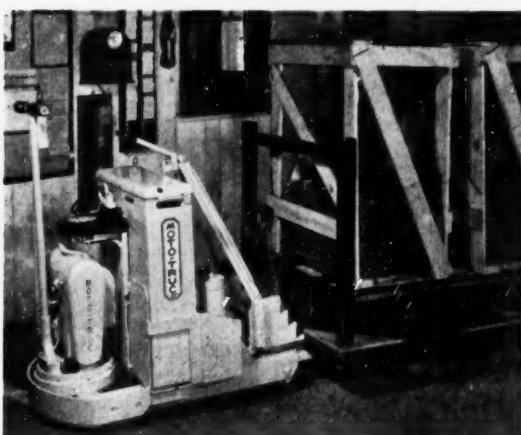
#### Costs Low for "Normal" Applications

As said earlier, walkies are not intended to compete with riding-type vehicles. However, figures of operation costs for the two types of equipment indicate economies inherent in the smaller vehicles. One large

(*More on next page*)



UNITIZED LOADS handled by walkie pay off in big dividends for this grocery warehouse. Economical for use by either large or small companies.



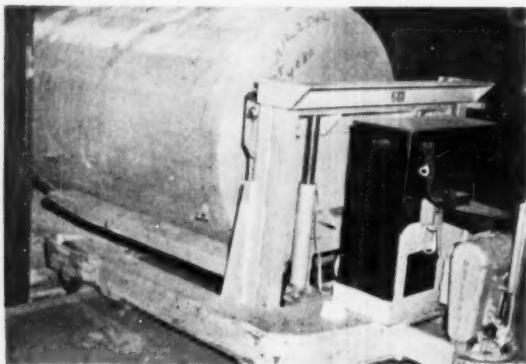
HAULING TRAINS OF FLOOR TRUCKS is one of jobs walkies do. Pulls units in excess of 4000 lbs.



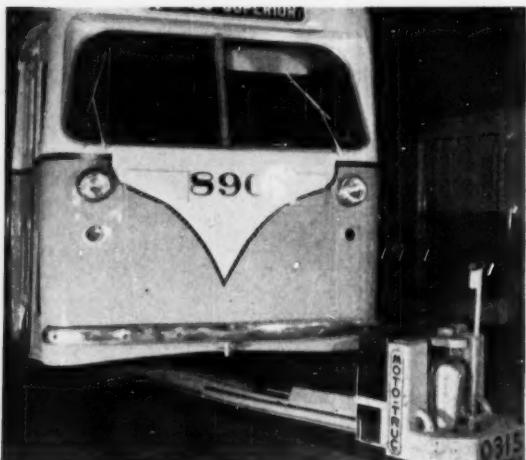
LOW-LIFT MODEL is equipped with forks for handling 4000 to 6000 lb. pallet loads. Moves horizontally only.



**RAILROAD BOXCARS** may be loaded or unloaded by walkie such as pictured. Units work well outside on surfaces that are generally smooth and free from ruts.



**PAPER AND FABRIC ROLLS** are transported economically by this unit. Specials such as this may be engineered for comparatively slight additional cost.



## MORE WORK FOR "WALKIES"

user of many types of industrial trucks estimates that operation of riding-type trucks costs him 76 cents per hour—as against 16-20 cents per hour for walkies. Obviously, this is a strong argument for walkies, although no one would admit that even these figures would tip the scales in favor of walkies where travel distances are great and, of course, where very heavy loads are involved.

Using these figures as a guide, it may generally be stated that walkies are best suited for the following operations or under the following general conditions:

(1) Where travel distances are not in excess of 150 feet, walkies are ideal. We have found some firms using walkies for greater moves, but we do not recommend them for such purposes. Likewise, we also see riding-type trucks used for jobs that are a sheer waste of their function. With the 76 cents vs. 16-20 cents figures, it is obvious that to use the large trucks for jobs the smaller should be doing is a wasteful practice.

(2) When loads must be handled in confined areas, walkies are most often suggested. Actually, in crowded areas larger trucks or the newer, smaller, riding-type trucks could operate. But, in many cases, walkie-type trucks with their maneuverability, can snake in and



**STRADDLE UNIT TRAVELS AND LIFTS** electrically. Equipment is especially designed for storage and warehousing operation in narrow aisles.

**BUSESSES**, WEIGHING 25,000 lbs. are hauled by special tractor during painting, other maintenance operations.

*Continued*

out of areas where riding-type trucks cannot easily travel.

(3) When floor loads are limited, light weight walkies have provided a source of power where, previously, physical effort was the only solution. The weight of a walkie is usually only one-third to one-half the weight of a riding-type truck of comparative capacity. It is thus ideal for operation on upper floors in older buildings, for example, where the original construction of the structure did not allow for modern-day, heavy handling equipment.

(4) Low-capacity elevators are often a bottleneck to powerized handling operations. Walkies, though, can place and remove pallet or skid loads on cars, or, when desired, even ride with loads between floors. Likewise, the shorter overall size of walkies facilitates handling on these floor-to-floor carriers themselves.

(5) For loading and unloading highway carriers and rail cars, walkies are often specified. Here again, generally low weight, small size and great maneuverability pay off.

Other advantages of walkies include: low initial cost, ease of maintenance, and no need for specially-trained operators.

*(Continued on page 152)*



DIE HANDLING & STORAGE is accomplished by one man. Walkie has special operating controls on skid platform for raising or lowering to proper shelf height.

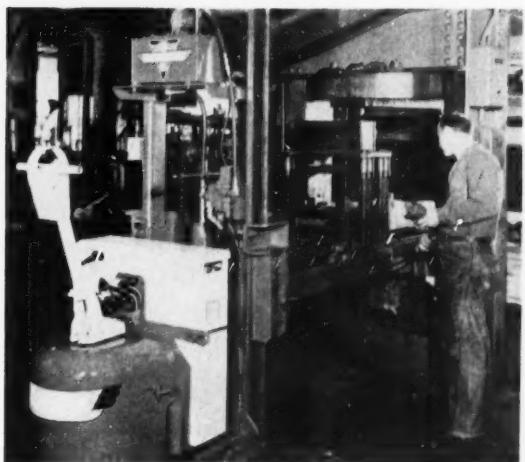
HEAVY INDUSTRIAL JOBS of all kinds are handled with ease and economy by these tough little units.



TEN SIDES OF BEEF are moved within cooler at once. Meat hangs on hooks suspended from casters riding on overhead rail, and is pushed by the walkie.



GROCERY ORDER-PICKER may ride tug or walk. Steering is a full 360 degrees, by heavy ring turret; speed is controlled by smaller throttle ring.



# Semi-Automatic Handling Through Plating

□□□□ **MOVES**

**KEEPS**

**PRODUCTION UP** □□□  
**REJECTS DOWN** □□

WHEN DEMAND for increased production of chrome-plated bath, lavatory and related plumbing fixtures called for a major plating room overhaul, Speakman Co. of Wilmington, Del., was faced with three alternatives.

(1) It could enlarge present manual operations—hire more men, purchase more equipment and operate as before, only on a larger scale. (2) It could go to a fully automatic system requiring only that parts be hung on and removed from an endless overhead conveyor, which automatically would move the work from tank to tank, dipping as required by the plating cycle. Or, (3) it could adopt an in-between or "semi-automatic" system. With this, manual and automatic tech-

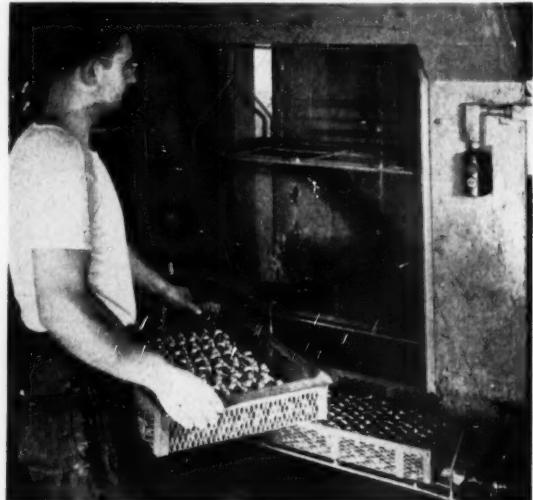
niques would be combined to give advantages of both methods.

Expansion of manual operations was quickly discarded as a possibility. This method simply did not offer the technical or economical benefits available with present-day methods for the size operation contemplated.

The full-automatic system, too, was ruled out. Speakman plates some 3,000 different parts having different sizes and shapes. Some require special attention to obtain the desired finish. In addition, both brass and zinc are plated, and different steps are required in plating these metals. Because of the wide variety of parts and the different base metals, it was believed



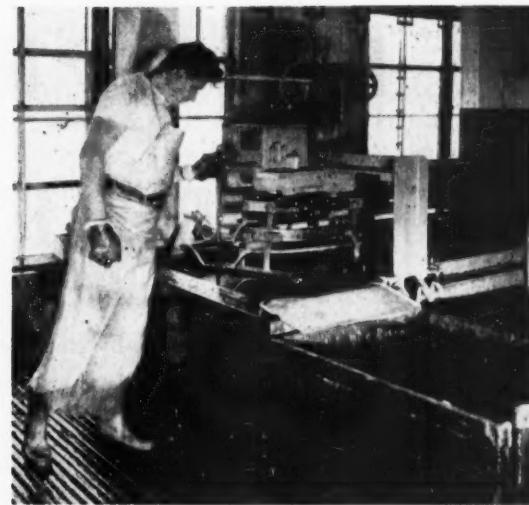
FIRST MECHANIZED plating operation—racks hung on moving conveyor of 30-ft. nickel plating machine.



AT END OF CONVEYOR line, workers remove parts from racks to boxes. Empty racks return via conveyor.



SCHEDULED FOR PLATING, parts are hung on long racks carried by conveyor. Each part has special rack.



TAKEN FROM roller conveyor by operator, baskets of parts are loaded onto degreaser carriers, then stored.

that full-automatic wouldn't offer the flexibility necessary for this quality output. This also was the most expensive of the alternatives.

It was felt that a semi-automatic set-up would offer the added capacity required and, at the same time, produce the high quality product demanded.

This has been borne out by the fact that Speakman now plates up to 22,000 parts per day—as compared to about 18,000 before—and has a reject rate of less than 0.03 percent—where formerly rejects ran between 2.0 and 3.0 percent. Normal considered by most platers is 1.5 to 3.0 percent.

## Two Operations Mechanized

In designing the semi-automatic system, mechanized equipment was specified for two major plating operations. The others were to be performed manually. Application of the chrome plate itself and coating with the preceding nickel base coat would be accomplished in so-called "semi-automatic" machines.

These two plating steps require parts to be left in the tanks for several minutes. If tanks were batch loaded, operators would be idle while actual plating took place. Tanks would be idle during loading and unloading operations.

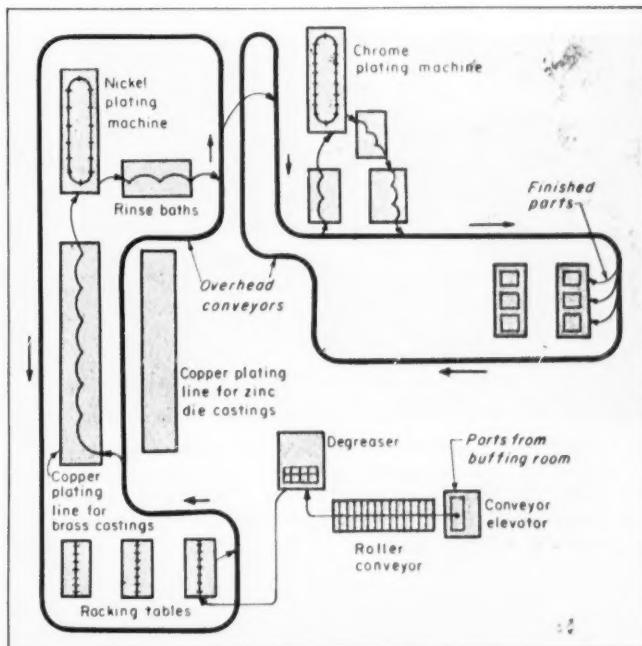
The semi-automatics keep both men and equipment busy full time. Parts are hung on an endless conveyor which moves them through the bath. Operators keep adding and removing racks as the conveyor moves past the loading station. And, of course, the tank is always full.

Other steps in the Speakman set-up require only

*(Continued on page 100)*



VERTICAL TRAY CONVEYOR brings parts for plating from buffing room, feeds automatically to rollers.



COMPLETE PLATING CYCLE shows how mechanized operations are integrated with manual handling.

# ENGINEERED WAREHOUSING

**Step-by-step development of a modernization plan in which handling and order picking systems determine building design**

by R. W. Witherspoon and C. E. Hansen,  
Midwest Research Institute, Kansas City, Missouri

**A**PPLICATIONS of the engineering approach to material handling in warehousing have increased rapidly during the last few years. That such applications can save money and step up production is again demonstrated in a new installation recently opened by a firm handling products from paper clips to newsprint.

Carpenter Paper Company has recently completed a change-over from the old to the new in warehousing systems at their Fort Worth, Texas, location. The Fort Worth warehouse is one of thirty nine in Carpenter's widespread operation.

Warehousing under the old system operated with many of the well-known handicaps; i.e., three floors and a basement, a single elevator, uneven wood floors, limited floor load capacities, inadequate receiving and shipping facilities, multiple handlings, no stacking or tiering equipment, man-power handling, narrow aisles,

and, in general, unfavorable working conditions.

Caught in a three-way squeeze composed of (1) mounting operating costs, (2) a physical plant that was facing forced retirement by a planned city expressway, and (3) a limited capacity to serve customers—because the existing system was extended to the limit and operating at maximum capacity—Carpenter's management studied the problem and went to work. The decision to go all the way in modernization was forthcoming, and the job broke down into three phases:

**Phase 1:** Construction of a new building.

**Phase 2:** Installation of a new handling system within the building.

**Phase 3:** Physical move to the new building.

## Phase 1—

The new building is a single story, concrete structure of tilt-up wall construction, bar joists and metal



ABOVE: Completed orders on floor trucks stop for checking and wrapping enroute to shipping dock.  
CENTER: Fork trucks in pallet rack area handle palletized goods. RIGHT: Straddle trucks in shelving area operate in 7-foot aisles.



roof deck, containing 104,000 square feet. Important features from a materials handling standpoint include:

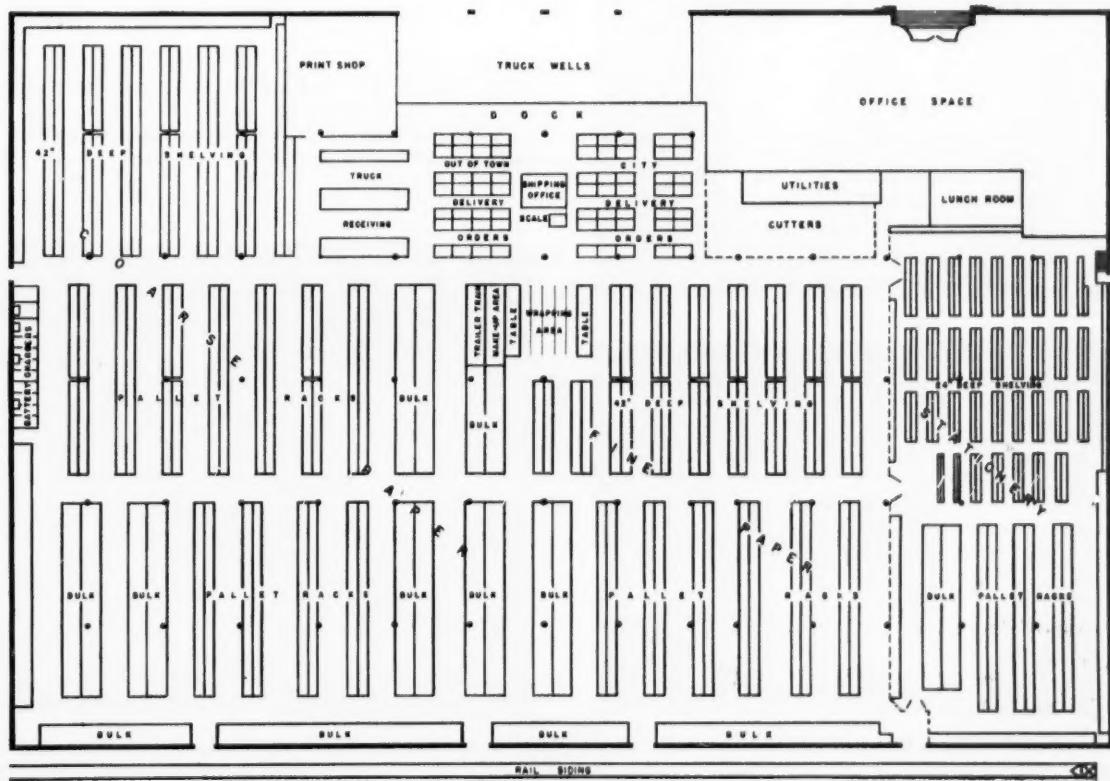
1. Concrete floor on compact fill, providing relatively unlimited floor loading.
2. Dock high floor at truck bed and rail car floor level, eliminating lifting while loading or unloading.
3. Sixteen foot clearance between floor and ceiling joists, providing good overhead storage area consistent with practical loading heights and economical building construction.
4. Bays 28 x 43 feet, limiting the number of interior supporting columns.

**RIGHT:** Orders on floor trucks, awaiting shipping, were previously accumulated by trailer trains, **BELOW**, on long picking route.



5. Aluminum painted overhead for better utilization of natural light.
6. Four rail car doors, providing spotting of rail cars adjacent to storage area of the type of merchandise being received.
7. Enclosed truck docks accommodating eight vehicles and providing night storage of delivery equipment.

*(More on next page)*



# ENGINEERED WAREHOUSING

. . . continued

8. Location away from congested down town area, with provision for future expansion, ample parking area, and delivery routes that need not vie with city traffic.

Modern air conditioned offices, including sales and display facilities under the same roof, make Carpenter's new warehouse a pleasant place to work and a fine place to do business.

## Phase 2—

Carpenter's paper business at Fort Worth requires handling about 500 orders per day, with an average of five or six items per order. Orders range from a single item to complete stock replenishment. The stock handled includes some 12,000 items of all sizes, shapes, and descriptions. To name but a few—pen points; fountain pens; business papers; wrapping papers and bags; paper towels; building papers and printers' papers, including 2000 lb. rolls of newsprint and 4000 lb. skids of book papers.

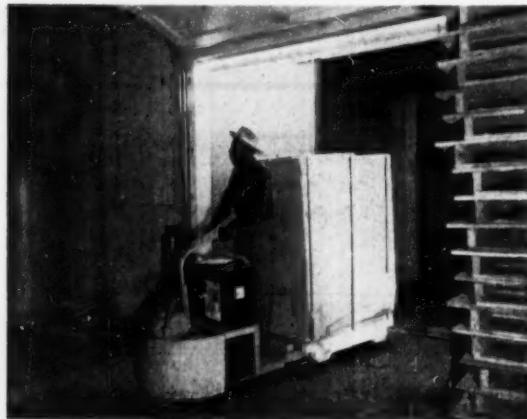
The first step in developing the system was an

analysis of the stock items to determine the volume of storage, number of items, rate of turn-over and weights to be handled. This information—coupled with an understanding of the wide range of sizes and quantities that must be handled on individual orders—defined the major requirements of the storage and handling system. First, the storage system must provide for three basically different types of storage. Second, the handling and order picking system must be designed to serve the different storage areas effectively.

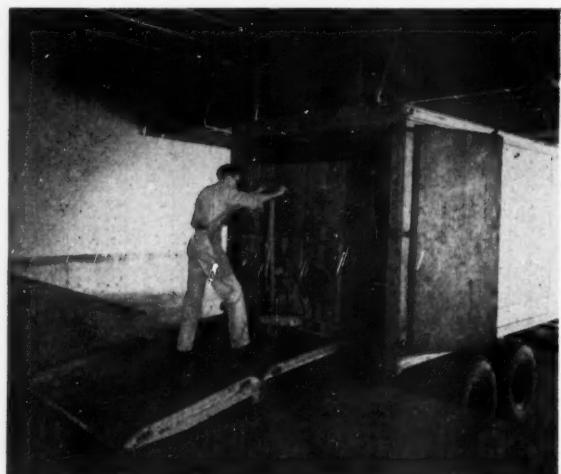
## Three Basic Storage Elements

The three types of storage facilities selected were: First, that required for relatively small size and small quantity order items. Adjustable shelving was selected for this storage to provide numerous individual bins or compartments and a high degree of selectivity.

Second, a method of storage for the medium-to-large size and larger quantity order items. A pallet, of dimensions to best fit the stock, was selected for unit load handling, and pallet racks were chosen as the method to provide the storage and selectivity required. To better utilize the space above the shelving, and to maintain reserve stocks of such items adjacent to the permanent stock location, a special framework



LEFT: Powered skid truck unloads bulky loads from rail cars. LEFT BELOW: Walkie pallet truck moves large orders of unit packs. BELOW: Magnesium dock boards and hand lift trucks combine for fast truck unloading.



## Layout Calculations for Typical Area

To illustrate the use of this mathematical layout tool the following figures show the final layout for the back third of the building running from the outside wall on the left to the stationery department boundary (see layout on page 89).

**Basic Dimensions:** Bulk Area (2 deep) 7'-0"  
Double bulk area 14'-0"  
Double pallet rack 7'-0"  
Fork truck aisle 10'-0" (min.)

**Area Requirements:** Fine Paper—6 double pallet racks  
1 double bulk area  
Coarse Paper—4 double pallet racks  
4 to 4½ double bulk areas

**Other Conditions:** A. Some bulk areas have to be centrally located.  
B. The fine paper racks and bulk have to be adjacent to the fine paper shelving (on the right).  
C. The coarse paper racks and some bulk are to be adjacent to the other coarse paper racks (on the left).

Columns are 6" diameter—Dimensions are to column center line.

Fixed Points (feet & inches)	Layout (feet & inches)	
	From	To
0-0 Wall	0-0	7-0 Bulk area—2 deep
	7-0	17-9 10-9 Aisle
27-0 Column (in-side bulk area)	17-9	31-9 Double bulk area
	31-9	41-9 10-0 aisle
55-0 Column	41-9	55-9 Double bulk area
	55-9	65-9 10-0 aisle
	65-9	72-9 Double pallet rack
	72-9	82-9 10-0 aisle

83-0 Column (at edge of rack)	83-3	90-3	(0-6 extra aisle)
	90-3	103-9	Double pallet rack
	103-9	110-9	13-6 aisle
			Double pallet rack
111-0 Column (at edge of rack)	111-3	121-6	(0-6 extra aisle)
	121-6	128-6	10-3 aisle
	128-6	138-9	Double pallet rack
			10-2 aisle
139-0 Column (in-side bulk area)	138-9	152-9	Double Bulk Area
	152-9	163-3	10-6 aisle
166-0 Column (in-side bulk area)	163-3	177-3	Double bulk area
	177-3	188-0	10-9 aisle
192-3 Column (in-side bulk area)	188-0	202-0	Double bulk area
	202-0	212-9	10-9 aisle
193-6 Column (in-side bulk area)	212-9	219-9	Double pallet rack
220-0 Column (at edge of rack)	220-3	230-0	(0-6 extra aisle)
	230-0	237-0	9-9 aisle
	237-0	246-9	Double pallet rack
			9-9 aisle
247-0 Column (at edge of rack)	247-3	254-3	(0-6 extra aisle)
	254-3	263-9	Double pallet rack
			9-6 aisle
264-0 Column (at edge of rack)	264-3	271-3	(0-6 extra aisle)
	271-3	283-6	Double pallet rack
	283-6	290-6	12-3 aisle
			Double pallet rack
290-9 Column (at edge of rack)	291-0	301-3	(0-6 extra aisle)
	301-3	308-3	10-3 aisle
	308-3	317-6	Double pallet rack
			9-3 aisle
317-9 Column	317-9	318-9	1-3 Extra aisle
318-9 Fence—Stationery Department			

After going across an area in one direction, the same approach is used to check the other direction so that the posts will fall between pallets. This method was used in each section of the warehouse.

was built into the top of the shelving units to support pallet loads.

Third, bulk storage required for large size or high quantity order items and for special or reserve stock. The pallets were also used in the bulk areas, but since the bulk items require a low degree of selectivity, pallet racks are not necessary and bulk pallet loads are stacked up without racks.

### Mathematical Layout Method

The next step was the layout. A determination of the area requirements for each type of storage was made and the available warehouse area apportioned

for shelving, pallet racks and bulk areas in ratio to the needs of each. From the size and weight of the pallet loads to be handled, the aisle requirements for fork trucks and straddle trucks were established. Aisle widths, together with standard shelving dimensions and pallet rack sizes, made up the basic building blocks for the layout. A mathematical method of layout was employed. Using the dimensions of the five basic "blocks"—shelving units, pallet racks, bulk areas, fork truck aisles and straddle truck aisles—mathematical progressions, composed of the block dimensions in proper sequence, were calculated and compared with

*(Continued on page 148)*



• RAIL CRANE loads overhead aggregate hopper



• SPREADER bar piles pipe parallel to spur

## Pointers for Higher Yard Productivity

Especially for plants planning new or expanded outdoor operations, here are ideas from the long experience of a man who administers the wide-spread handling activities of a big utility.

by L. G. Wisely, Supt., Purchases and Supplies, Michigan Consolidated Gas Co.

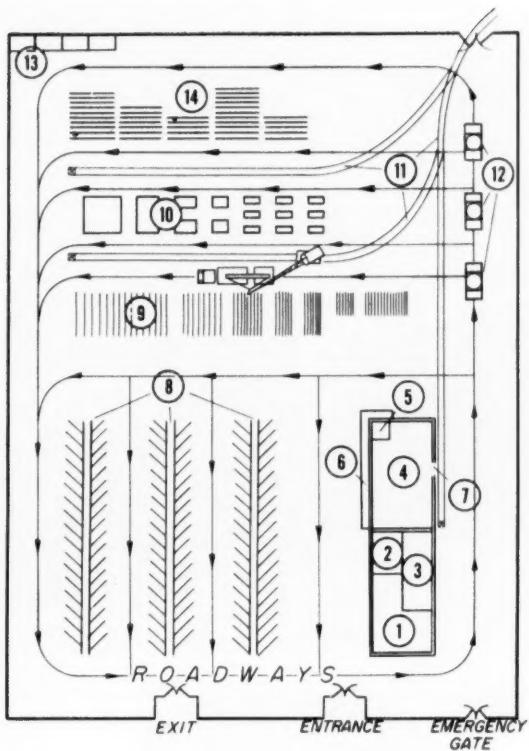
**W**HEN ADDITIONAL OUTSIDE STORAGE area is not readily available, and a company must consider developing a new, if somewhat distant yard "from scratch," planning for built-in, sound handling principles can overcome much of the disadvantage of distance.

There is one distinct advantage in starting a yard—you are not bound to any previous practices. A leaf from our notebook of experience may help others who have the problem of establishing new or expanded outdoor storage areas.

Selection of a site must include, of course, well drained terrain; availability of a railroad; sufficient area for future expansion, and adequate parking facilities for transportation, handling and other equipment. The basic design of the yard then includes the following principal points:

1. Proper location of the railroad spur to service the maximum amount of storage area.
2. Grading of satisfactory material for the base to carry the necessary loads. (This may consist of cinders or crushed stone.)
3. Construction of driveways, with an adequate base to handle heavy equipment and truckloads of materials, to permit ready access to all storage areas. (Material may be broken concrete, asphalt, or pavement.)
4. Provision for floodlighting for plant protection and operation after dark

When these requirements have been satisfied, the layout of materials to be stored can be planned. And



1. Office area
2. Vehicle repair shop
3. Washroom and locker area
4. Storeroom area
5. Gasoline and oil room
6. Loading dock
7. Receiving area
8. Company vehicle parking or storage area
9. Steel pipe storage
10. Low pipe fitting and miscellaneous stock between spur tracks
11. Railroad spur tracks
12. Hoppers and bins for sand, gravel, slag, etc.
13. Bins for scrap iron & steel, rubbish, etc.
14. C. I. pipe storage

**NOTE:**

All railroad trackage flush with ground to provide additional roadway for vehicle travel.

Asphaltic concrete road surfaces.

here are the factors that must enter into the plan:

Ready accessibility of all material.

Minimum horizontal movement in handling.

Good housekeeping.

Safety in all details.

For maximum flexibility, every item possible is palletized for fork truck handling. Bulkier items, such as pipe, are tiered for handling by mobile crane. Fast moving materials like sand, stone and pebbles are

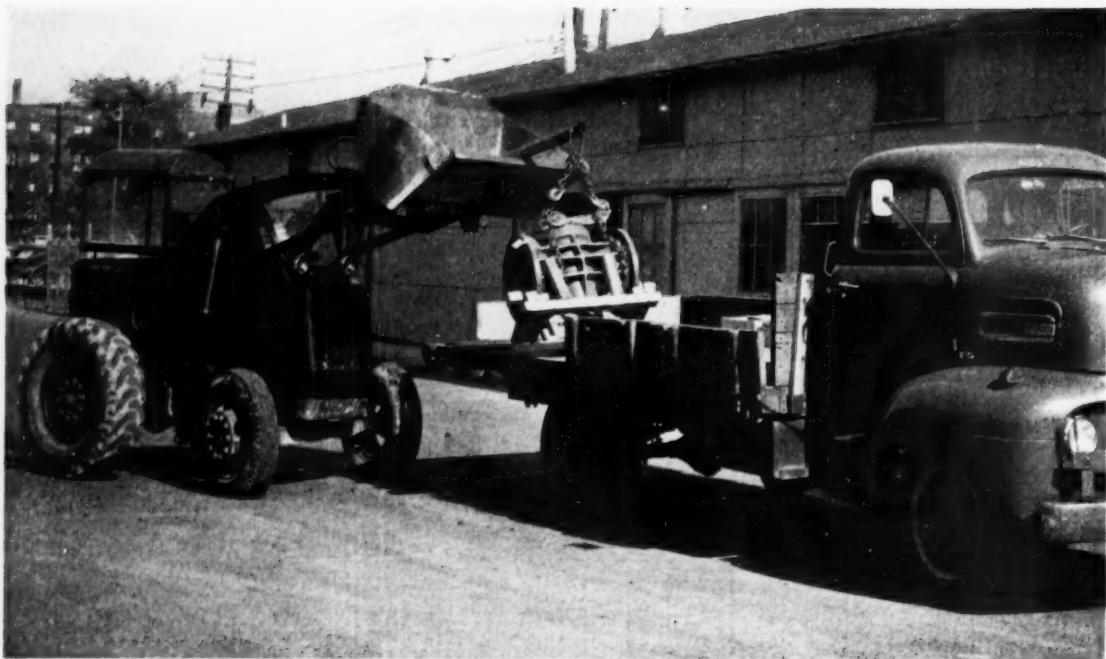
loaded by crane shovel into overhead hoppers immediately adjacent to the railroad spur, and where possible, with driveways under them, parallel to the spur. Slower moving bulk materials, such as scrap and black dirt (which we use for reconditioning lawns) are stored in ground level bins for handling by tractor-mounted scoop.

This scoop may also be equipped with a boom and

(More on next page)

**PALLETIZATION** is carried as far as possible for unit load handling. Stacking patterns are studied and applied even for very awkward items such as pipe fittings, valves.





**BOOM ATTACHMENT** on front-end loader doubles its usefulness. Above, it loads valve onto stake truck. It is easily detached when bulk must be handled. At right is close-up showing details of construction.

chain attachment for efficient handling of articles weighing up to one ton. It is used, along with cranes, to load parts on pallets for handling and stacking.

Except where large bulk is involved, random lengths of steel pipe are piled at right angles to the railroad spur. This permits:

Maximum segregation.

Maximum use of track footage.

Ready selection of lengths.

Reduction of the necessity to roll pipe to within reach of the crane boom.

Standard lengths of cast iron pipe are piled parallel to the railroad siding to allow maximum use of the sling spreader attachment on the crane, which handles the maximum number of pipe lengths of given size at a time.

#### Organizing the Operation

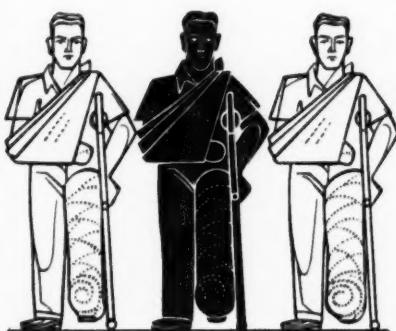
It is essential in carrying out any handling program that safety be ever in mind. Good yard housekeeping is a major factor of safe operation. Advance planning is required for the proper stockpiling of incoming materials. We have found that insistence on neat and orderly piling has paid off in efficiency and safety.

No handling operation can be successful without adequate supervision. The responsible executive must have qualified leaders—and enough of them—to see that the work is economically and safely accomplished.



Proper scheduling is essential. For example, almost all our vehicles are serviced with gas and oil at night so that daytime delays are eliminated from that quarter.

And, to keep good control, frequent procedure reviews are required. Changed methods, new materials, availability of new handling equipment and other factors make it necessary that a continuing study be made of handling in the yard as well as in the plant.



**BECAUSE OF REQUESTS** for follow-up information on safety—resulting from the special section on Safety and Material Handling in December, 1953, FLOW—these valuable safety aids offered by manufacturers are briefly described in alphabetical order. If you want more details, samples, or quantities of any, simply address a note or postcard to FLOW.

### 1. Automatic Transportation Company

Four illustrated booklets on safe operation of industrial trucks, first three beamed at administrative level, the fourth for operators: (1) Bulletin No. 6, "Industrial Truck Operators are Trained . . . Not Born", beamed at administrated level, tells what it takes to develop efficient truck operators—based upon the Navy's war-time experience. (2) Bulletin No. 7, "Safety in Fork Truck Operations"—covers operating fundamentals. (3) Bulletin No. 9 "Training and Skill Pays Dividends"—on development of skill and alertness. (4) Bulletin No. 10, "Operating Kinks . . ." tricks of the trade for handling in "tight spots".

### 2. The Baker-Raulang Company

Series of eight posters to remind operators of safe driving and operating practices. Printed in color on



# Handling Safety Aids offered for your use

14x22 sheets, in bold cartoon style, with tag-line, "Be Smart . . . Be Safe".

### 3. Bucyrus-Erie Company

Thirty-two page booklet, "Ways to Make Your Excavator Work Harder, Live Longer", illustrated in two colors—provides easy-to-follow instructions for the safe operation, care and maintenance of power shovels and cranes.

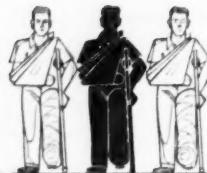
### 4. Clark Equipment Company

Training and safety film titled, "Safety Saves"—for operators of industrial trucks—is available upon a loan basis. A dramatic, 30-minute presentation of the "do's and don'ts" of safe fork truck driving.



As a companion piece—something to leave with the viewers—is Clark's booklet, also called "Safety Saves", which covers driving safety in brisk cartoon-and-caption style.

# Handling Safety Aids Offered for Your Use



*Continued*

## 5. The Electric Controller & Mfg. Co.

A 46-page, two-color booklet, "How to Operate A Crane", offers comprehensive instructions and advice on all aspects of handling by overhead traveling crane. It is fully illustrated with sketches, drawings, and photos.

## 6. Harnischfeger Corporation

A "Crane Maintenance Record", part of which is shown below, is printed on both sides of heavy card. Measuring 11 inches wide by 3½ high, it is organized for quick, complete reporting of service and maintenance checks and data. It is designated "Form No. CMRC".

Also available is a handy "P & H Crane Trouble Shooter", a compact, 32-page, question-and-answer book that takes care of about every situation that might be encountered. It includes diagrams, lubrication charts, safety instructions and other useful data.

## 7. Hyster Company

An informative, 2-color, 32-page manual, copiously illustrated with sketches, cartoons and diagrams. This not only stresses safety practices for industrial vehicles but also includes operational fundamentals, principles of material handling by lift trucks, exercises in maneuvers, and the rudiments of stacking.



## 8. Lewis-Shepard Products Inc.

A highly legible, eye-catching, two-color, cartoon-style safety poster measures 22 inches wide by 32½ inches high. Seven panels cover the most important aspects of safe fork truck operation.

Also provided is an 8½x11, 2-color, 8-page booklet of special interest to supervisory personnel, titled, "Operating Your SpaceMaster Fork Truck," it points out that training programs for fork truck operators are not only for big fleet owners—that if you own only one fork truck you are big enough for a training program. Through brief descriptions, cartoons and drawings, it outlines the steps in such a program—from choosing an operator through an outline of driving instruction to care of equipment and safety rules.

## 9. Shepard Niles Crane & Hoist Corp.

All parts of a crane which need regular or periodic attention for fully safe operation are detailed in a "Crane Inspection Report". This is an 8½x11 sheet on which is printed the names of parts by principal assemblies—for quick, sure, organized attention.

## 10. Towmotor Corporation

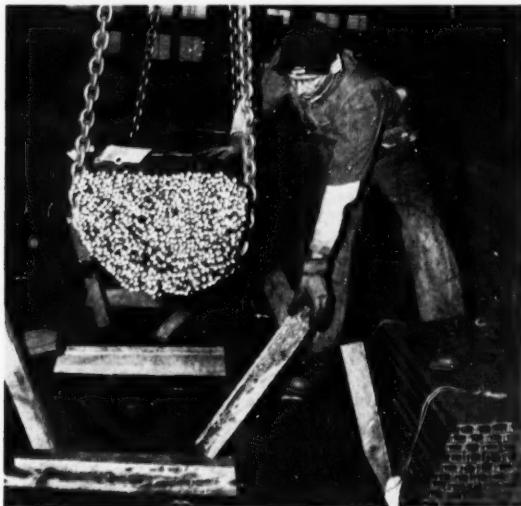
Offered to all manufacturers is a "Plant Safety Kit" consisting of four interior plant signs, which caution truck operators of "Blind Corners", "Traffic Crossing" and the like; eight cartoon-type bulletin board posters; and an "Operator's Guide". The traffic signs are in



bright colors with large type face to emphasize their safety messages. Posters are colorful, humorously illustrated safety tips for fork lift truck operation. The Operator's Guide, pocket-size for easy carrying, emphasizes safety precautions and driving regulations within the plant.

### 11. United States Steel Corp.

Three pocket-size publications which are used extensively in U. S. Steel's safety department will be supplied to other organizations. These are booklets, "Single Objective Safety", "The 3 C's of Safety" and "Safety Pinups". The first two are published by U. S. Steel, the latter by the Mercer, Howard Co. but U. S. Steel will be glad to furnish it upon request. "Single Objective Safety" is a ring-bound book which outlines a safety program for supervisors. Printing is in two colors; illustrations are by photos, sketches, diagrams and charts. "The 3 C's of Safety"—Compre-



hension, Contact and Control—provides details of safety forms and controls as well as typical case histories. It illustrates a program developed from an analysis of 2,000 heavy-industry accident reports, a great part of which were due to poor handling practices. (The accompanying illustration of a bad practice is taken from this book.) "Safety Pinups" is a little book for employees. It uses baby photographs in which dishabille tots lampoon the well known plant characters who won't observe safety rules.

### 12. Jervis B. Webb Company

A four-page 8½x11 folder, in two colors, is titled, "10 Rules for Safety in Conveyor Operation". It is intended for reading by management and supervisory personnel.

### 13. Whiting Corporation

Suitable for posting on bulletin boards, in crane cabs and other strategic locations, a poster measuring 12½ inches wide by 18 high stresses safe practices: (1) for those working in areas where cranes are operating; and (2) those responsible for hitching and hooking jobs. A large, easily understood section at the bottom illustrates standard hand signals for crane operation. On heavy card, printed in orange and black, this poster is titled, "Watch Your Overhead Traveling Cranes".

Also offered by Whiting is pocket-size, 26-page booklet, Rules for the Safe Operation of Overhead Traveling Cranes". This is for issue to all personnel who have anything to do with overhead cranes.

### 14. The Yale & Towne Manufacturing Co.

Two booklets and a series of posters are offered for plant safety programs. "Let's Play It Safe" is a 2-color, 16-page cartoon-type book covering the principles of fork truck safety. "Material on the Move" is a thoroughly illustrated 8-page, two-color booklet intended to help operators of walkies to make their jobs both safer and easier.

The safety poster illustrated is one of a collection



of 16 which Yale prepared for the Bureau of Supplies and Accounts of the Navy Department, and which the Bureau offers to industry. (Flow will forward requests to the Navy Dept.) These are 17 inches wide and 22 inches high, on heavy paper, in bold black and white cartoons and type.



NATIONAL President George A. Smith (left), of Binghamton, N. Y., presents First Prize to H. S. Clark.



SECOND prize awarded by Travis Parrish (left), Regional V. P. of Houston, Tex., to A. C. Johnson, of Montreal.



QUAD-CITY Charter presentation, with, L to R, George Smith, R. H. Weingartz (Chapter Pres.) and I. Footlik, Nat. Director.



OFFICERS OF AMHS, left to right, A. K. Strong, Chairman of Conferences; Past President Donald Pennock; President Smith; S. H. Isaacs, Vice President; D. A. Gillespie, Secretary; and A. J. Sanders, Treasurer.

## AMHS Names Wunsch Award Winners

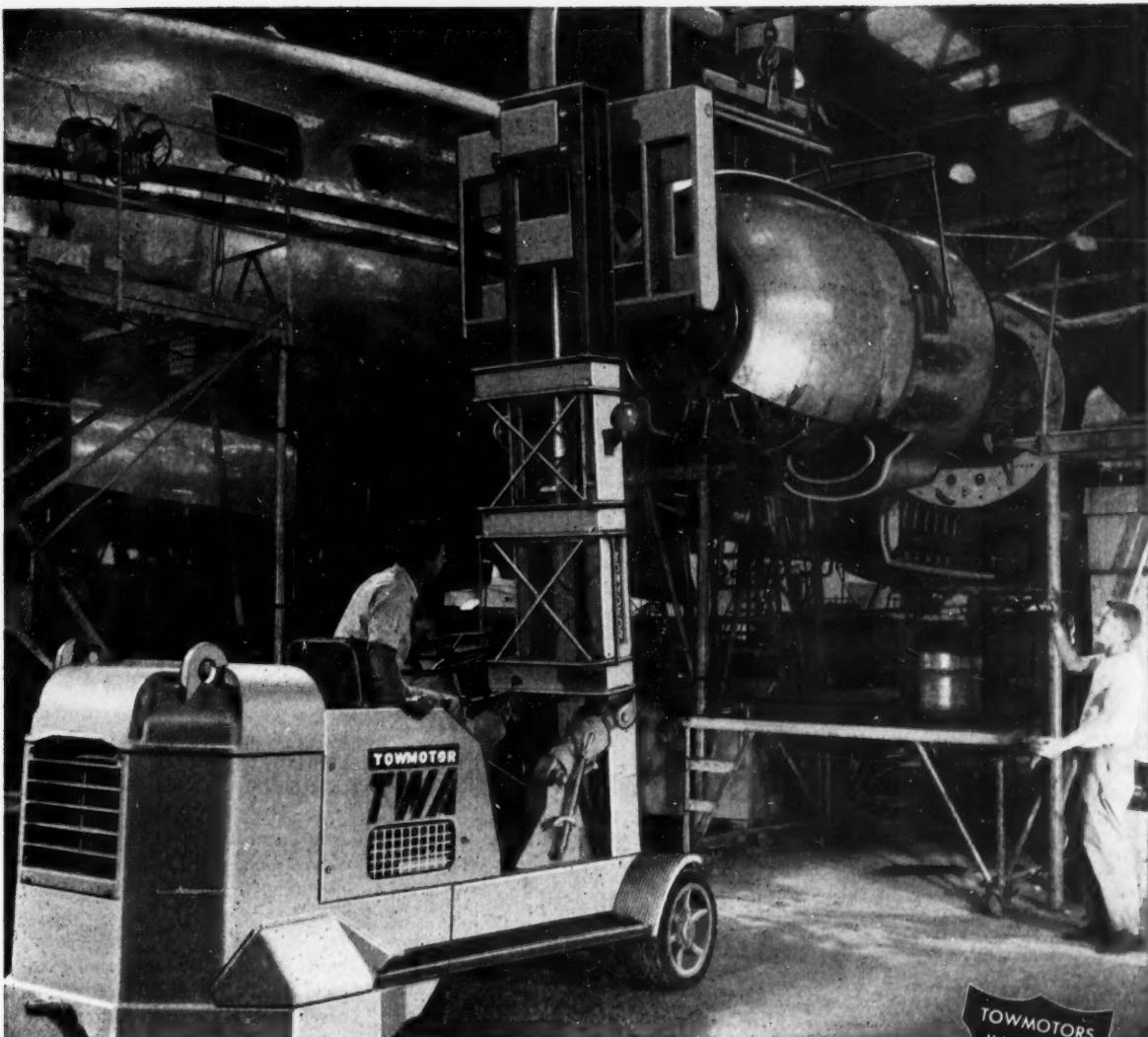
RECIPIENTS of Annual Wunsch Foundation Awards in competition held among members of the American Material Handling Society have been named by T. R. Williams, Chairman, Honors and Awards Committee. They are (First Prize) H. S. Clark, Engineering Service Div., E. I. du Pont de Nemours, Inc., Wilmington, Dela.; (Second) A. C. Johnson, Northern Electric Co., Ltd., Montreal, P. Q.; (Third) C. W. Metter, Willow Grove, Pa.; (Fourth) M. Carlstrom, Lewis-Shepard Products Inc., New York, N. Y.; (Fifth) A. L. Sullivan, Chicago, Ill.; and (Sixth) M. D. Canning, Chicago.

Awards, made under a grant to the AMHS by J. W. Wunsch of Silent Hoist & Crane Co., were presented to the two top men as all winners were announced at the semi-annual meeting of the AMHS Board of Directors held in Cleveland Jan. 9 and 10.

### Vote Dernberger Scholarship

The Board also agreed to suggest to Chapters that \$600 be raised to match the sum already offered by the Material Handling Institute for the establishment of a \$1,200, 2-year scholarship for a Material Handling studies at Wayne University, in memory of the late W. J. Dernberger, of Ford Motor Co., who did so much to advance the interest in and science of material handling.

Chapter Charters were issued to St. Louis, Quad City (Rock Island, Moline, Davenport), and Los Angeles (reinstated).



Towmotor LT-90, removes Cyclone Engine from TWA Constellation, at Fairfax Airport, Kansas City.

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IN U. S.  
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## *It's Plane Easy*

Just as a TOWMOTOR greatly simplifies and speeds removal and handling of this 5,600 pound engine, TOWMOTOR can save considerable time and labor in your plant. From receiving all the way through to shipping, TOWMOTOR moves more tons per dollar. *TowmoTorque*, the drive especially designed for TOWMOTOR Lift Trucks, saves clutch and shifting time, brings new economies to stop-and-go driving, positions loads with precision—and, with *Power Steering*, boosts operator endurance and efficiency. More than 35 TOWMOTOR attachments enable you to handle "plane or fancy" loads with equal ease. The total savings produced, will make a big hit with your boss. Ask for free booklet, "What Makes It Tick?" TOWMOTOR CORPORATION, Div. 802, 1226 East 152nd Street, Cleveland 10, Ohio.

**TOWMOTOR**  
THE ONE-MAN-GANG

**FORK LIFT TRUCKS  
AND TRACTORS**

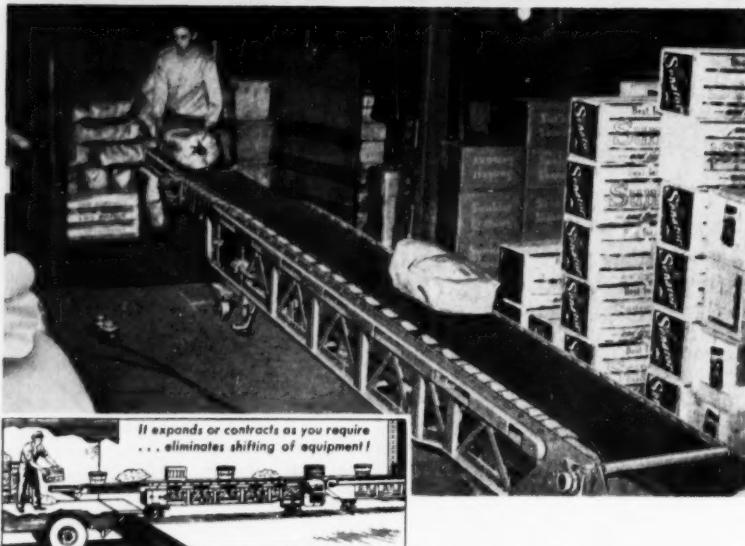
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FLOW • FEBRUARY, 1954

# IT S-T-R-E-T-C-H-E-S or CONTRACTS as you need it!



## VERSATILE FARQUHAR EXPAND-O-VEYOR is completely adjustable in length to meet your handling needs!

HERE's the revolutionary Farquhar Package-Handling Expand-O-Veyor—literally, the "conveyor with the two-way stretch." You can use it at its maximum length one day; then move it to another location and use it at minimum settings the next day. Use it in loading and unloading trucks—keep one end fixed and shorten or lengthen the other as your truck becomes full or empty. It is particularly suited for loading or unloading trucks with a fixed conveyor line. The versatility of the Farquhar Expand-O-Veyor makes it suitable for a wide variety of materials handling prob-

lems—especially where space and working requirements change often.

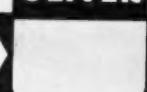
For more information on Farquhar portable, semi-permanent, and permanent power driven or gravity conveyors, write our engineering department, stating your problems. We'll be glad to consult with you . . . at no obligation, of course.

*Roll Along to Lower Costs—with Farquhar Gravity Conveyors.*

*Available in a variety of widths, wheel patterns, roller diameters, roller spacings, and types of connectors, in either Black Velvet or Standard finish—to meet your particular needs.*



**OLIVER**



**POWER-BELT  
AND  
GRAVITY  
CONVEYORS**

**FREE!** *Package-Handling Catalog showing all the cost-cutting, production-speeding Farquhar Package-Handling Conveyors.*

**MAIL COUPON FOR YOUR COPY**

**THE OLIVER CORPORATION  
A. B. FARQUHAR DIVISION  
Conveyor Dept. 06, York, Pa.**

Gentlemen:  
Please send me my free copy of the Package-Handling Catalog.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_ State \_\_\_\_\_

Circle No. 54 on Reader Service Card for more information

100

## SEMI-AUTOMATIC HANDLING . . .

(Continued from page 87)

that parts be dipped. Thus, no appreciable idle time—of men or tanks—is encountered. And the manpower provides the flexibility Speakman needs.

The combination of these two methods results in an economical, high production line which produces high quality plated products.

Following is the complete plating cycle:

Parts to be plated come from the buffering department on the floor above via a vertical tray-conveyor.

Metal baskets containing the buffed parts are rolled on and off the vertical conveyor automatically and onto a roller conveyor. An operator at the end of the conveyor places the baskets on a conveyor arm of a de-greasing machine.

After de-greasing, baskets and parts are stored in a convenient area near the racking station. When scheduled for plating, parts are hung on 2½-foot-racks. Each part has a special rack designed for its particular contour. Loaded racks are hung on a powered overhead conveyor. This conveyor services the racking station, the copper-plating line, the semi-automatic nickel-plating tank, and a re-racking station.

The racks are taken off the conveyor as they reach the manually-operated copper plating line. (A preliminary coating of copper is applied before the final coats of nickel and chrome.) Parts are first cleaned. They receive a direct alkali cleaning for 20 seconds, a reverse alkali cleaning for five seconds, a cold water rinse in an air-agitated bath, a dip in a 20 percent sulphuric acid solution (to neutralize the alkali and knock off any remaining oxide), and, finally, a rinse.

Parts are then copper plated in a Rochelle strike bath, and rinsed. This is followed by a dip in a 15 percent sulphuric acid neutralizing bath, then by another rinse. Racks are moved from tank to tank manually. Cleaning and rinsing

Circle No. 120 on Reader Service Card →

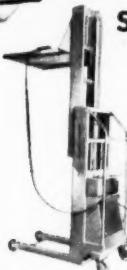
**FLOW • FEBRUARY, 1954**



More Purchasing and  
Material Handling Executives  
Specify SERVICE Equipment  
BECAUSE THE Service LINE IS THE Complete LINE!

### SERVICE LIFTERS are versatile

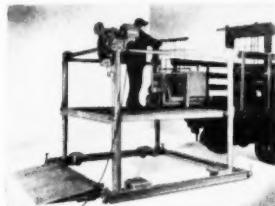
Available in single and telescopic models. Hand or power operated. Transport and stack loads with Service Lifters.



Left:  
Electric  
Hydraulic



Right:  
Storage  
Battery



### THE SERVICE LEVELER

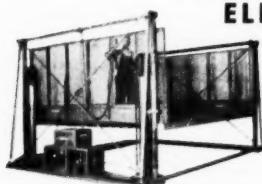
Industry's leading device for handling loads between levels. May be portable or permanently installed.

### SERVICE LIFTABLE

Work bench, truck and lifter all in one. Here's a machine with a hundred uses.



### THE SERVICE "4-POSTER" ELECTRAULIC LIFTER



Answering the demand for Lifters of highest capacity...mighty in every respect...dependable around the clock.

# SERVICE

# CASTER & TRUCK CORP.

Executive Offices  
ALBION, MICHIGAN

• Factories: ALBION, MICHIGAN  
and SOMERVILLE, MASS.

• Display Centers  
NEW YORK CITY and CHICAGO, ILL.

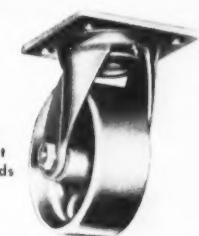
Sales Offices and Distributors In All Principal Cities

### DEPENDABLE CASTERS

Service—the finest name in casters—your assurance of the best in running gear for all handling equipment.



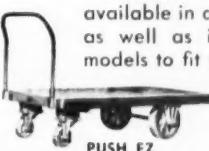
Left:  
Famous  
Forgewelds



Right:  
Low-cost  
Presswelds

### SERVICE PLATFORM TRUCKS and RUGGED TRAILERS

Service trucks and trailers are available in all familiar types as well as in non-standard models to fit your needs.



PUSH EZ



FIFTH  
WHEEL  
TRAILER

### HYDRAULIC LEVERLIFT TRUCKS

Inbred with characteristic Service stamina and staying power for tough handling jobs, Service leverlifts are economical aids throughout industry.



### SHEET FEED TABLE

In scores of plants these heavy-duty electric hydraulic machines respond tirelessly to demands of lifting and leveling loads for fast, continuous feeding.



# GAS

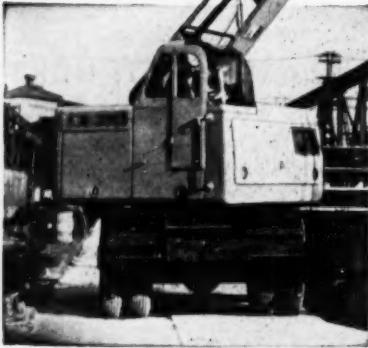
ECONOMY ?

**1 gallon  
per hour!**

first of  
**COLES**  
CRANES

## Bonus FEATURES

COLES advanced engineering with Gas-Electric design reflects the continuous study made of Industrial requirements. No other crane of similar capacity can show such terrific economy in BOTH OPERATING AND MAINTENANCE COSTS. A few users report maintenance cost LESS than on average fork lift truck. ECONOMY of gas is only one of the many COLES BONUS features.



### A Mobile Crane is the Most Flexible Lifting Tool Yet Designed!

- The Coles Crane is the most flexible of mobile cranes, having 360° full circle swing, cantilever type boom, and reversible steering. Every conceivable SAFETY DEVICE is fitted as standard on every COLES CRANE. These devices are designed to protect the Operator, the equipment and your investment. In Fact, COLES is the outstanding crane—that gives the Material Handling Engineer—remote control over his operator. When considering the purchase of a mobile crane—it will pay you to investigate COLES.

### WRITE FOR CATALOG



Information pertaining to several models with complete specifications and Illustrations of the various lifting operations yours for the asking.



The name that carries weight in material handling

**COLES**  
CRANES

**COLES CRANES, INC., 112-F JOILET, ILL.**

Circle No. 38 on Reader Service Card for more information

### SEMI-AUTOMATIC HANDLING

*Continued*

involve only dips; there is no appreciable loss of man-hours in waiting while reactions take place. If delays were involved, an automatic handling system might be desirable.

### Die Cast Treatment

Zinc die castings are also copper plated, but steps in the process differ. These differences are one reason for installing the semi-automatic system.

Zinc parts are given a reverse alkali cleaning, then a rinse, a dip in a one to two percent sulphuric acid solution, and another rinse.

Next, racks and parts are dipped in the Rochelle copper strike bath. This is followed by a rinse, then a Wes-X bath that puts on a 0.0004 to 0.0005-inch copper plate. Plating is followed by two rinse baths.

### Mechanized Nickel Plating

Following the copper-plating operation, both brass and zinc parts are given similar treatment in the nickel plating process. This is the first mechanized plating operation. Racks taken from rinse baths are hung on the moving conveyor of a 30-foot, semi-automatic nickel plating machine. The endless conveyor automatically moves the racks down one side of the tank, around the end, and back along the other side. By moving the parts through the bath, plating becomes a continuous, rather than a batch, operation. Parts are continuously being placed in and taken from the tank. There is no mass loading, waiting for parts to plate, and then mass unloading. A "9-H" bright nickel finish is plated on the parts, a 0.00015 to 0.00020 coat of nickel during 6 min. in the bath.

When the racks and parts have made a complete circuit, the operator removes them from the bath. He rinses them in a drag-out tank, then in a hot-water bath. He hangs the racks on an overhead conveyor,

**ACROSS INDUSTRY**  
**...FROM CAKES TO**  
**CASTINGS**



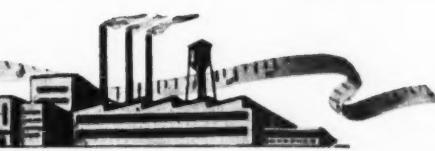
**TRAVELING TIME . . .** And when aren't things on the move in busy department stores, mills, warehouses, hotels, factories, etc. These tough, easy moving hard vulcanized fibre trucks, in Hercules or Dreadnaught construction, are available in a wide range of standard or special models for a thousand-and-one jobs in varied fields across industry.

**JUST OFF PRESS**

New catalog No. 54 illustrates and describes in detail our wide range of equipment designed for handling materials the modern way in your plant. For your copy, write, phone or wire direct to Dept. L-2.



**A SNUG HOME FOR FINE ROVINGS . . .**  
 They'll even hate to leave for the bigger things in their life. These safe, efficient Roving Cans are all hard vulcanized fibre seamless tube construction. Choice of metal or turned fibre top. Complete smoothness and freedom from snags, rough edges, holes, rivets, etc., recommend their use for safe materials handling in the textile field.



**Fibre Specialty Materials Handling Equipment**

If you move products, or transfer materials, Fibre Specialty Division engineers can improve your plant efficiency, reduce damage to work-in-process as well as finished goods, and cut costs generally with modern materials handling equipment.

With an extensive line of standard equipment from which you can choose, plus experience and engineering skill in the design and building of special equipment built to your needs, Fibre Specialty Division is equipped to serve as your *materials handling specialists*.

**FIBRE SPECIALTY DIVISION**  
**NATIONAL VULCANIZED FIBRE CO.**

WILMINGTON 99, DELAWARE



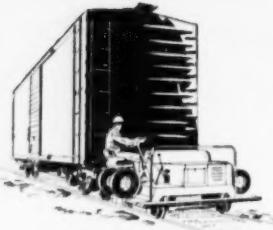
**FIRST RIDE OUT OF THE OVEN . . .** Takes a lot of care, a little patience, and good equipment. That's where we come in! These new Bakerboy Bake Trays are completely modern, functional systems for handling bread flat at the bakery. Special design of open side or end permits ease of product visibility. When stacked, trays form an interlocking shelf system permitting easy movement of the entire unit from wrapping machine to loading platform, truck or storage.

Circle No. 56 on Reader Service Card for more information



Road to Track in 30 Seconds!

## MOVE RAILWAY CARS quickly, easily... at low cost!



Moves Box Cars, Tank Cars, Gondolas,  
Flat and Hopper Cars!

automotive type controls, and employs a special hydraulic jacking action on the mated couplers to develop a maximum draw-bar pull of 8400 pounds! It frees larger locomotives for other tasks, helps reduce work crew waiting time, cuts demurrage and outside switching costs . . . keeps cars, materials and men on the move! Get complete information today!

### WHITING CORPORATION

15659 Lathrop Avenue, Harvey, Illinois

**Other Whiting Equipment to Speed Handling**—Overhead Cranes, Trambeam Overhead Handling Systems, Electric Chain Hoists.

**PROVED ON THE JOB!** "Reports From the Field on Trackmobile Savings and Advantages" shows actual Trackmobile dollar benefits . . . ask for your copy today!



Circle No. 139 on Reader Service Card for more information

## SEMI-AUTOMATIC HANDLING

*Continued*

which takes them to a re-racking station.

As the parts arrive at the re-racking station, they are unracked and the empty racks hung back on the conveyor, which takes them to the original racking station for removal and storage. The operator then re-racks these parts and hangs the racks on a second overhead conveyor, which takes them to the chrome plating tank. At this station, holes which would cause gassing and improper plating are plugged with corks. The re-racking prevents nickel from being dragged into the chrome bath and contaminating it, and vice-versa. This manual step is felt to be crucial to high quality and low reject rate. It is another reason for the semi-automatic system.

### Semi-Automatic Chrome Plating

When the racks reach the chrome plating line, an operator takes them off the conveyor and dips them in a 15 percent sulphuric acid bath, then a rinse.

The racks are then hung on the conveyor of a 20-foot, semi-automatic chrome-plating machine. Parts are given a 0.000015 to 0.000020 inch coat of chromium during 2½ minutes in the bath. Current density may be changed 10 or 12 times a day, depending on the size, shape, and number of parts to be plated.

After the chrome plating operation, racks and parts are dipped manually into a drag-out tank, then given a weak alkali dip. This is followed by a rinse and a hot water dip to dry the parts off. Racks are then hung on the overhead conveyor and carried to the un-racking station. Here, workers take the finished parts off the racks and place them in packing boxes. Empty racks are hung on the conveyor, which takes them back to the re-racking station.

Seven operators, each trained in all phases of the plating operation, run the three plating lines.

Six others, most of them women, work at the three racking stations.

#### Special Plating Room Features

With all plating processes, there is naturally some water and solution which spills on the floors and down the sides of the tanks. The concrete floor in the cleaning and plating area was installed 18 inches below the regular level with four 6-inch diameter drains-to-sewer covered with an acid proof floor. So workers won't have to work on wet floors, this area is covered with duck boards at regular floor level. They are painted with black Everjet to protect them against the dripping acid and alkali solutions.

The sides of all tanks also are painted Everjet black. In addition, Speakman has conceived protective coverings for tank fronts exposed to dripping liquids. This innovation consists of bumper boards, painted Everjet, spaced about an inch from the tank front and covering the entire front. A piece of rubber tubing runs along the top edges of tank and bumper board. Dripping liquid spills on the rubber and flows down the bumper board, avoiding contact with the tank front.

*FLOW thanks the Hanson-Van-Winkle-Munning Co. for details and pictures on this installation.*



"This test should convince you of the quality of my product."

FLOW • FEBRUARY, 1954

#### PRODUCTION AND MORALE GET A

# Quik-Lift

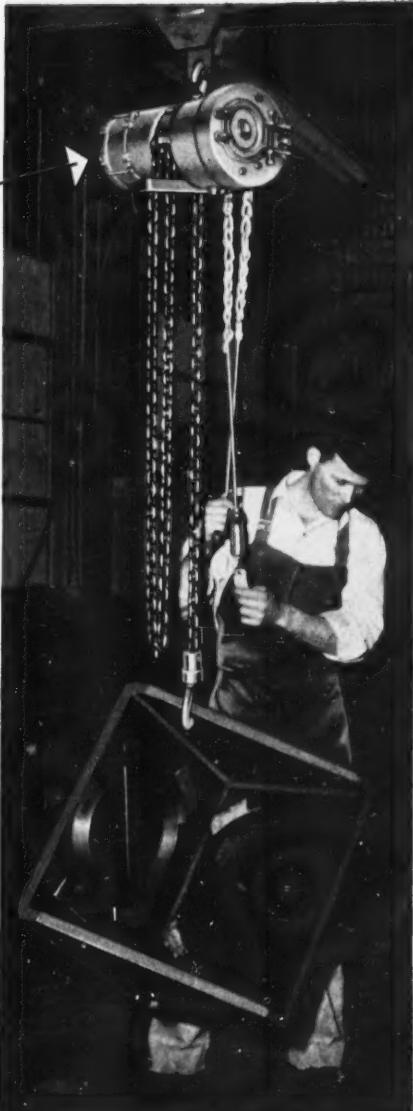
#### AT THE HAMER OIL TOOL COMPANY



"Production and worker morale have gone up noticeably since we installed Coffing Quik-Lift Electric Hoists," says Floyd S. Hamer, production manager of the Hamer Oil Tool Company, Long Beach, California.

This leading manufacturer of blind and plug valves finds that Quik-Lift Electric Hoists have more than measured up to expectations—both for their ability to *do* the job and to *stay on* the job. So successful were the first few units tried, in fact, that today there are 36 Quik-Lifts in one building alone.

Quik-Lifts are made to order for production work of this type. They are built to stand up under tough assembly-line use. Like Hamer, many have found that a Quik-Lift's dependability soon repays its



cost in saved down time—and production and morale get a lift in the bargain.

For full information on Quik-Lifts, and the complete line of Coffing portable hoists, write Dept. FL2E.

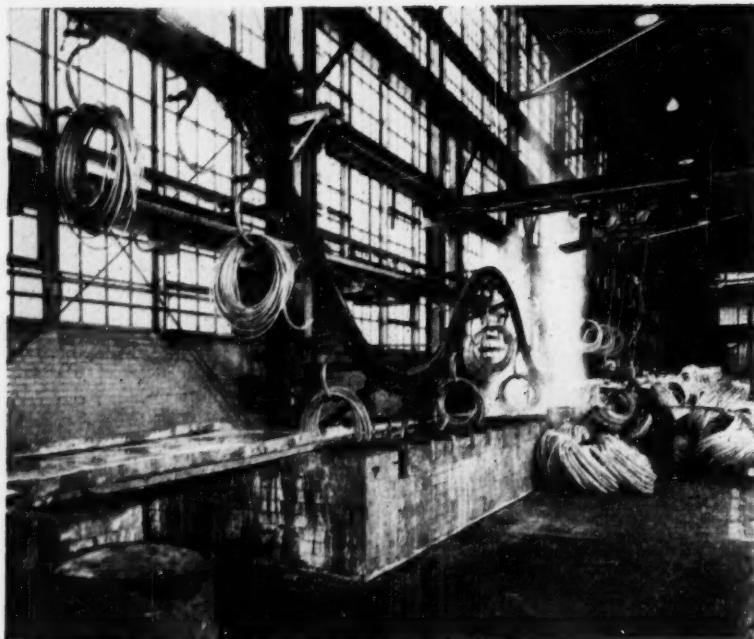


## COFFING HOIST COMPANY

Danville, Illinois

Hoist-Alls • Safety-Pull Ratchet Lever Hoists • Mighty-Midget Pullers • Spur-Gear Hoists  
Differential Chain Hoists • Load Binders • I-Beam Trolleys

Circle No. 37 on Reader Service Card for more information



## OVERHEAD TROLLEY CONVEYERS

*one of the many types of high-quality power and gravity conveyors in the MATHEWS Line*



Overhead Trolleys are among the most frequently applied types of power conveyors. They are used to serve processing machines, move material from one area to another, take components through painting, drying and enameling operations, and are, in fact, an extremely versatile type of equipment. Trolley Conveyors can be lowered, through the use of transverse bends, to working areas so that parts may be placed or removed from hooks or trays. They are used for storage conveyors, holding materials until needed and saving valuable floor space for production machines.

- Write for catalog HB53 for complete details of Trolley Conveyors and for other types of Power Conveyors and Special Conveying Machinery, or for Catalog No. 853, featuring numerous installations that might help you with your conveying problems. Both catalogs are yours for the asking.



## MATHEWS CONVEYERS

GENERAL OFFICES . . . Mathews Conveyer Company  
ELLWOOD CITY, PENNSYLVANIA

PACIFIC COAST DIVISION . Mathews Conveyer Company West Coast  
SAN CARLOS, CALIFORNIA

CANADIAN DIVISION . . . Mathews Conveyer Company, Ltd.  
PORT HOPE, ONTARIO

Engineering Offices or Sales Agencies in Principal American and Canadian Cities

Circle No. 154 on Reader Service Card for more information

## SALES FIELD

*Continued*

**Basco Mfg. Co.** has announced several new distributors for its magnetic sheet steel separators. They include **George F. Blaikie Inc.**, in Worcester, Mass.; **Industrial Maintenance Corp.** in Memphis; **Factory Supplies Co.** in Rockford, Ill.; **R. E. Condit Co.** in Dayton; **R. D. Grier & Sons** in Salisbury, Md.; **Cohn Bros. Inc.** in Waterloo, Ohio, and **Cardinal Steel Co.** in Cleveland.

**E. M. (Abe) Abramson**, President of Ohio Equipment Co., Inc., material handling distributors in Cleveland, has moved his firm to a new location at 1658 St. Clair Ave. The new facility, expected to be in full operation by January 15, includes ground floor display rooms and windows.

**Ed Conlon and Company** has taken on exclusive distributorship of the **Ideal Stencil Machine Co.** and the **Bee-Line** portable paper cutter in Chicago, northern Indiana and Illinois. Conlon recently formed his own distributorship at 6713 Olmsted Ave., Chicago, after resigning as vice president of the Rockwell Barnes Co.

**Transmission Engineering Co.** in Philadelphia has been appointed as sales engineering representatives for the **Cone-Drive Gear Division** of the Michigan Tool Co. H. H. Fry is manager of the firm which will serve Cone-Drive throughout southeastern Pennsylvania, Delaware, New Jersey and Maryland.

**Easiquip Co.** has appointed the **Freeland Equipment Co.** as its distributor in Maryland, Virginia, Delaware and the District of Columbia. The 23-year-old distributor firm is located at 1600 South Caton Ave. in Baltimore.

# PACKAGING and SHIPPING SECTION

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DEVOTED TO THE MECHANICS OF PACKAGING AND  
PREPARATION FOR SHIPPING . . . MATERIAL HANDLING FUNCTIONS

# An Easy Index to This Month's Advertisers

Are you looking for a particular type of packaging and shipping equipment? Listed below are advertisers according to the type of product they are advertising in this issue. We have attempted to make your job a little easier by listing them as often as possible. To use this index, find the type

of product in which you are interested . . . turn to the advertisers listed under that product . . . circle the correct numbers on the reader service card, mail it in, and you'll get complete information in a jiffy.

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# WORLD'S STRONGEST TAPE?

"Scotch" Brand Filament Tape. Super-strong, shock-resistant for heavy-duty packaging and materials-handling. Thousands of filaments imbedded in pressure-sensitive adhesive with new exclusive "mirror-surface" that gives 100% tape contact, puts all the amazing tape strength to work. Write on your letterhead for more data, free test samples.

FILAMENT TAPE...one of  
**300** PRESSURE-  
 SENSITIVE TAPES  
 for industry, trademarked...

REG. U.S. PAT. OFF.  
**Scotch**  
 BRAND



The term "Scotch" and the plaid design are registered trademarks of Minnesota Mining and Manufacturing Co., St. Paul 6, Minnesota. General Export: 122 E. 42nd St., New York 17, N.Y. In Canada: London, Ont., Can.

**LOOK what you can do with it!**



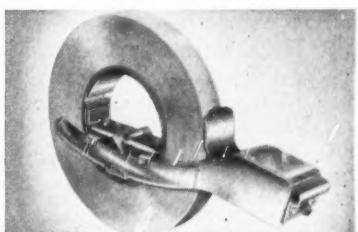
**BAND AND IDENTIFY** tubing, conduit and steel rod stock with "Scotch" Brand Filament Tape. Sticks tight. Tape comes in red, white, black and transparent for color coding.



**STOP LOAD-SHIFTING** during shipment with "Scotch" Brand Filament Tape. Tests have proved 99% "safe shipments." And tape is easy to apply, easy to remove at destination. No disposal problem, either!



**PALLETIZE UNITS** with a single strip of "Scotch" Brand Filament Tape around the top layer. New "mirror-surface" adhesive gives sure, fast application. Tape has greater shock-resistance than other industrial tapes now on the market.



**SPEED APPLICATION** with this new hand dispenser designed especially for "Scotch" Brand Filament Tape. Heavy-duty construction. Rust-proof. Corrugated blade gives longer life, quickly cuts tape up to 1-in. wide.

Circle No. 98 on Reader Service Card for more information



THOR CORP., GLADIIRONS



GARDEN GROVE, CITRUS FRUITS



UARCO, INC., BUSINESS FORMS



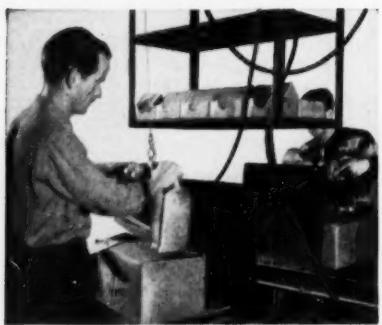
ENTIAT, APPLES



EXCELSIOR, BICYCLES



CANDYLAND, CANDY



AVON PRODUCTS, COSMETICS



HARRISON, STEEL CABINETS



PINNACLE, FRUIT PACKERS



## NINE WAYS TO CUT PACKAGING COSTS ...with international staplers!

Nine different companies . . . nine different problems. Yet, all of these companies found a common solution in the versatility, economy and dependability of International Stapling Machines. More than twenty different models, from simple and efficient hand operated portable models to the last word in completely automatic equipment, are available to meet *your packaging needs*. They have saved other companies from \$11,000 to more than \$28,000 per year . . . as high as eight times their cost.

**Check these advantages:** International staplers are fast ★ Staples do not hide ad copy ★ Safe, strong closures ★ Pilfer-proof closures ★ Save working space ★ Save manpower ★ Save material ★ and they meet shipping regulations.

Investigate these money and time saving "packaging experts" today! Write for bulletin C-201, 12 page complete line catalog, or tell us your special problems.

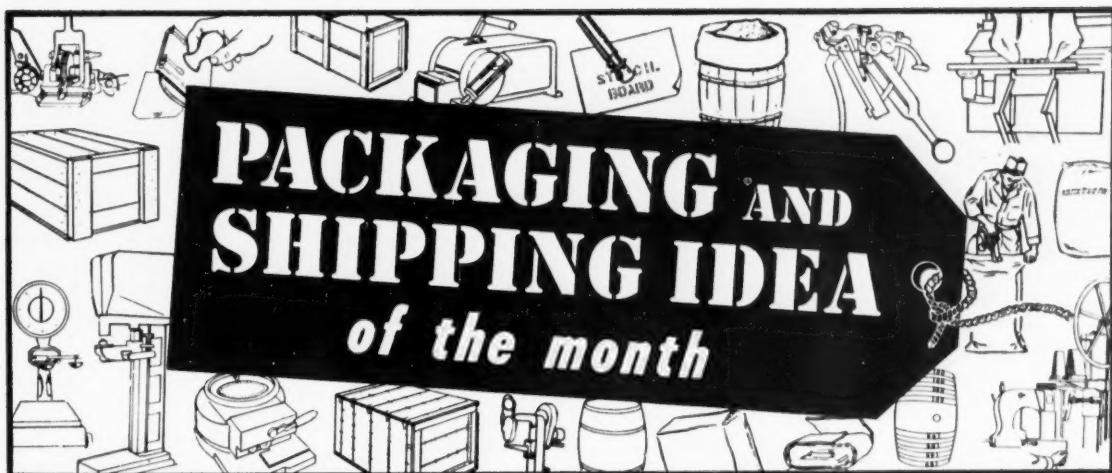
*the Royal Family of Packaging*



# International *Staplers*

International Staple & Machine Company  
808 East Herrin Street, Herrin, Illinois

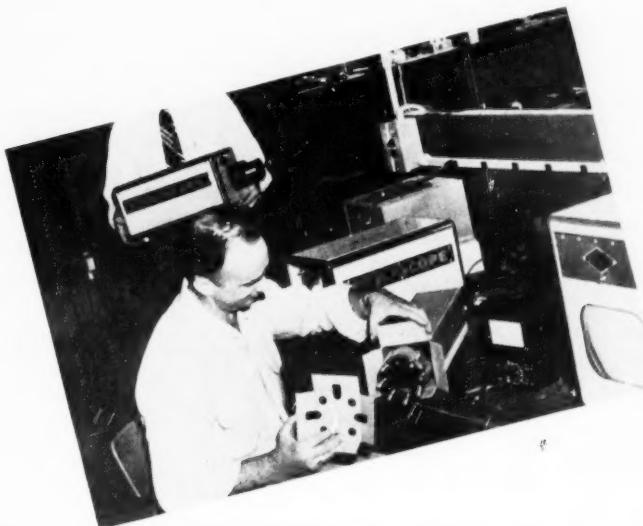
Circle No. 76 on Reader Service Card for more information



## Safe Package for \$1200 TV Tubes

A television camera tube,  $4\frac{1}{2}$  inches in diameter and  $14\frac{1}{2}$  inches long priced at \$1200, presented a tough packaging problem to Diamond Power Specialty Corp. Although well suited to the rugged requirements of industrial work, the cold cathode type tube which is the heart of the company's Utiliscope can be considered "fragile" in the usual sense of the word.

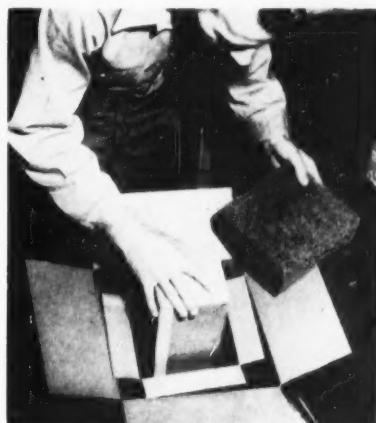
A protective technique, described in the accompanying photos was developed, and over a two-year period has resulted in safe transit from plant to user, both domestic and foreign.



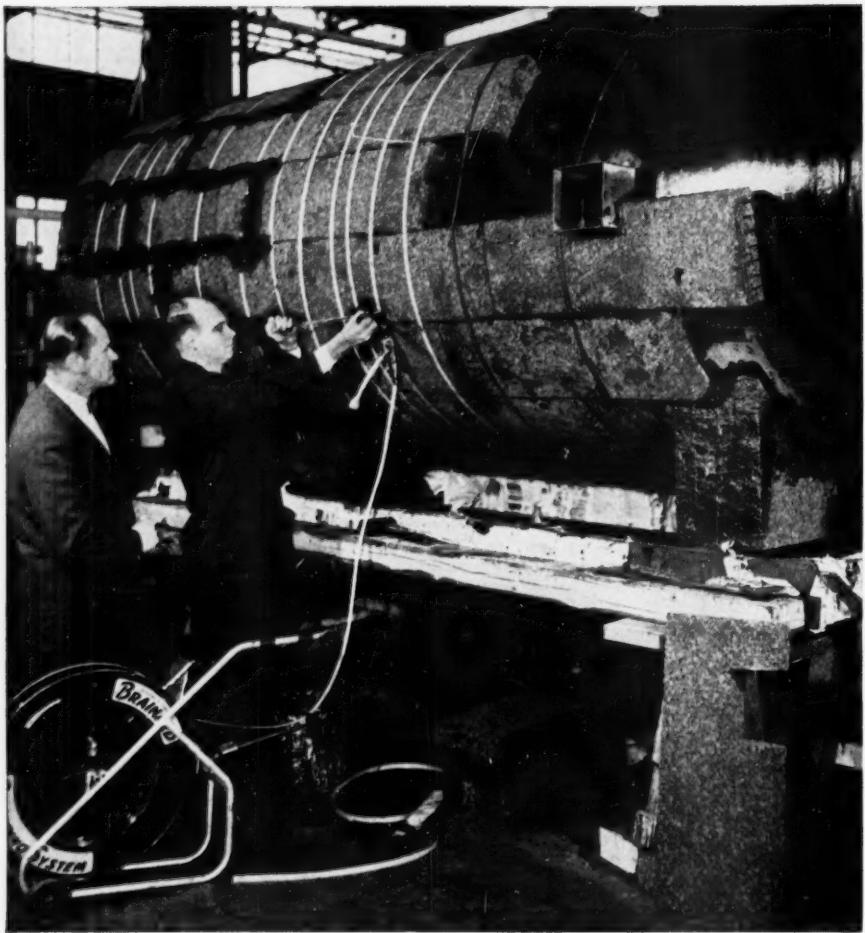
SLEEVE-TIGHT BOX holds tube within the package. Tube is kept in place by a corner-cut tray which also protects the electrical terminals. Note snug fit of tube in corrugated box.



RUBBERIZED HAIR PADS are placed at bottom of air-celled corrugated container. Flanges on the box fold outward to float it in a central position.



FLOATING CONTAINER is lined with rubberized hair. After two pads have been placed on top, outer shipper is sealed.



*Photo courtesy Liquid Carbonic Corporation*

## Brainard Strapping Service wraps up an insulation problem

• Here's a vital step in Brainard service—*showing how it's done.*

Sydney White, one of Brainard's Chicago salesmen, was called in to help work out a better method of securing insulation on these large liquified gas containers. After analyzing the problem, he recommended this method of steel-strapping the cork insulation in place — then demonstrated on the job.

Brainard's complete line of steel strapping equipment (it covers over 1500 items) was a major help to Syd-

White in providing complete service. He supplied Brainard galvanized strapping—to resist moisture from condensation. He recommended special tools—that permit strapping tightly on a curved surface. Result—a satisfactory solution that saves labor and materials in the bargain.

Call your nearby Brainard salesman for this kind of service on *your* packaging and materials-handling. No obligation for an analysis of your operations. Brainard offices located throughout the U. S. and in Canada.



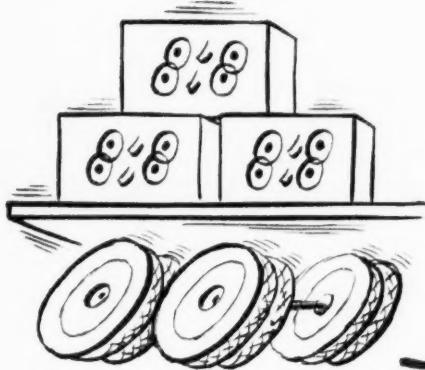
COMPLETE STEEL STRAPPING SERVICE, LIGHT AND HEAVY DUTY STRAPPING, TOOLS AND ACCESSORIES



### STEEL STRAPPING

For booklet on Brainard Strapping System write Brainard Steel Division, Dept. K-2, Griswold St., Warren, Ohio.

Circle No. 25 on Reader Service Card for more information

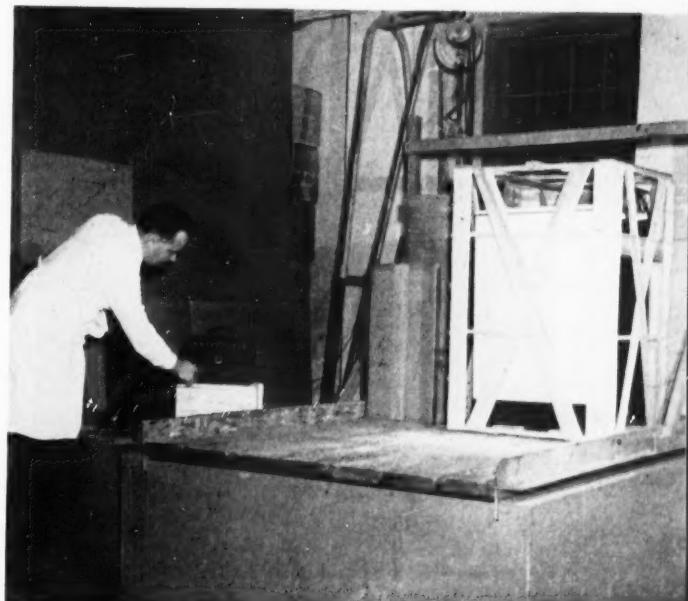


# HOW MUCH VIBRATION CAN YOUR PACKAGES TAKE?

Sudden shocks, resulting from switching, humping, rough roads, dropping by handlers, are not all you have to be concerned with in designing a package. Constant vibrations, resulting from car wheels striking rail joints, etc. can also result in expensive damage.

PACKAGE testing apparatus should simulate, as closely as possible, the forces, motions, accelerations, vibrations and shocks experienced by a packed product when transported from the factory to the ultimate consumer. "Transportation" might involve railway freight cars, railway express or mail cars, motor trucks or air-craft. It might also involve any number of types of handling devices which are used at railway terminals, truck docks, air ports etc. If an overseas destination is to be reached, transportation might involve vehicles like sleds, river boats or barges, ocean liners, or even animals or human couriers. Usually, combinations of several or many of the above modes of transportation may be expected.

Obviously, shippers do not always know in advance what forms of transportation will be used for the en-

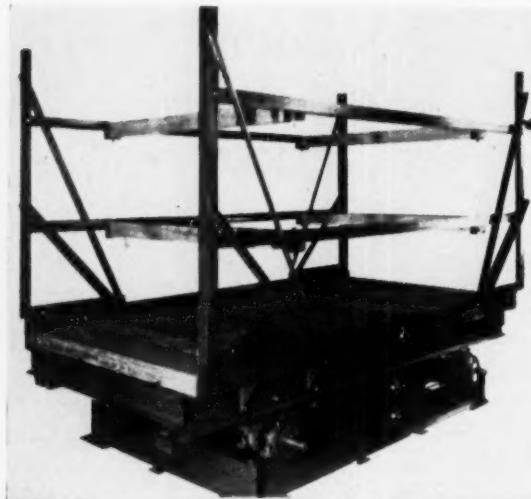


VIBRATION TEST MACHINE in use at Packaging Service Corp. tests large and small packages of different types, side by side. G-Meter, used in conjunction with machine, measures vibrations accurately.

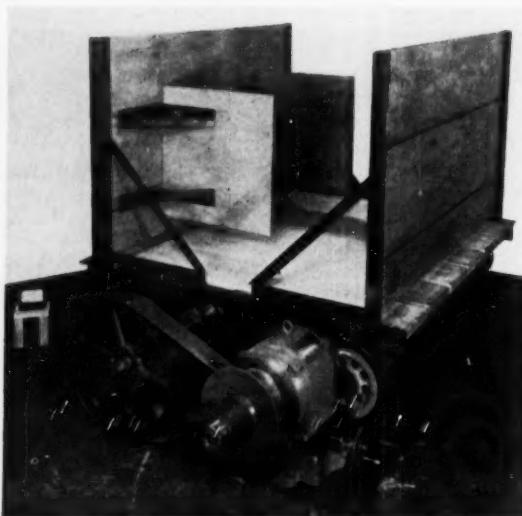
# VIBRATION



*Continued*



**FIVE THOUSAND LB. CAPACITY** machine has table five ft. wide and eight ft. long. Note superstructure on sides to provide method for retaining packages on table and to provide impacts as package moves about.



**SPECIAL TESTING MACHINE**, designed for testing military packages, has adjustable "fences". Lateral fences are 2 ft. long and 2 1/2 in. high and side fences are 5 ft. long. Has indicating electrical tachometer.

tire trips which their packaged products must make. Therefore, it is necessary to design packages, with the help of testing equipment available today, so that they will withstand the worst average hazards which might be encountered. This must be done with an eye to economy, since the added cost of excessive packaging might be greater than the damage or loss which it might prevent.

Most shipping today is via freight cars, motor trucks and air freight. The hazards of those types of transportation with the many handlings each entails, are well known and understood, for all practical purposes. It has been found, for instance, that a package which can withstand a vibration test for one hour at accelerations equivalent to 1 g and is then dropped in a predetermined cycle of 10 drops, will usually ship for 1000 miles without excessive losses due to breakage.

These tests have been prescribed by the National Safe Transit Committee (FLOW, Jan. 1953, page 108).

## Types of Testing Procedures

Packaging testing involves, primarily, two types of tests, vibration and impact. The vibration test will be the main subject of this article.

Briefly, however, impact tests are conducted to determine a package's ability to withstand sudden shocks due to switching, humping, rough roads, dropping by handlers, etc. For packages over 100 lb., an incline impact tester (Conbur Tester) is usually used. For packages under 100 lb. a drop test is often conducted, either with a drop table with split top, or with a quick release hook or shackles.

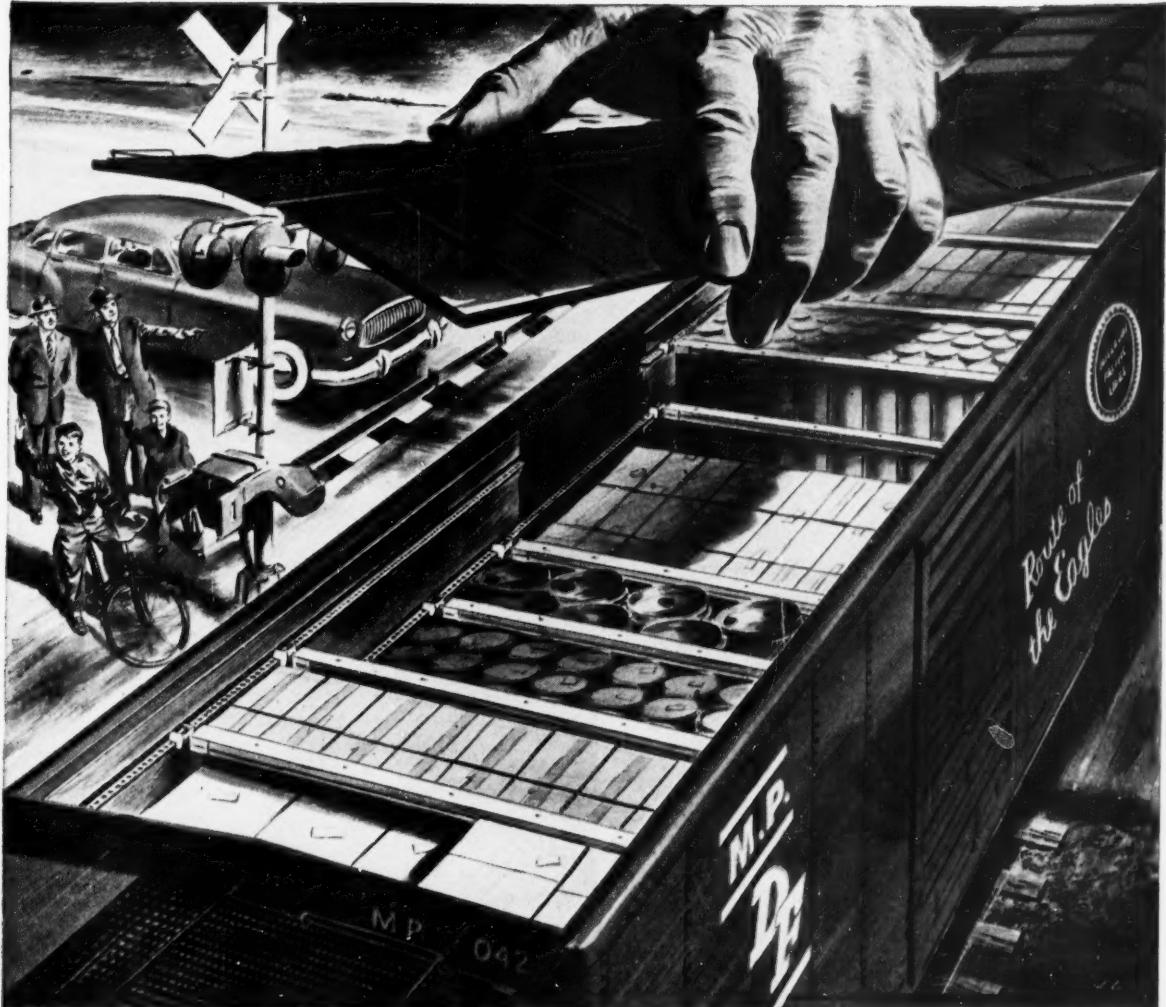
A rough handling test, usually run in a revolving drum is another method which is used a great deal to determine the ability of a container to protect its contents. Other tests include: compression tests; bursting tests (to determine strength of corrugated board); flat crush tests; puncture tests; moisture-proofness tests; weather-proofness tests; scuffing tests; ring stiffness tests.

## Vibration Testing

Vibration testing has grown in importance in the last decade. It is now known, that vibration (such as that which is activated by the wheels of railway car striking rail joints) is often more destructive than are occasional shocks. The periodic frequency encountered depends upon the speed of the train and is expressed by the formula:

Frequency (cycles per sec.) = mph x .089. Thus,

(Continued on page 121)



## How the MISSOURI-PACIFIC uses Evans DF loaders to effect Big Savings for shippers

The Missouri-Pacific, for years, has conducted a successful campaign to eliminate obsolete methods and equipment. This program has been planned with statesmanship . . . executed with vigor, and has resulted in a highly progressive, finely equipped freight service with strong competitive advantages for their shippers.

The adoption of Evans DF Loaders was an important step forward in this program. The DF Loader is an Evans development that locks in the lading with cross members called "Wonder Bars". These bars make ordinary dunnage unnecessary and eliminate damage in transit. Shippers on the Missouri-Pacific have saved millions of dollars because of this improvement.

The Missouri-Pacific finds that DF cars attract business . . . produce more revenue because they can be loaded heavier . . . increase revenue substantially because damage claims are drastically reduced. Millions of damage-free ton miles on 34 class I railroads demonstrate the effectiveness of the Evans DF Loader as a revenue producer. Write for illustrated brochure to Evans Products Company, Dept. AF-2, Plymouth, Michigan.

LOCKS LADING INTO BOX CARS  
**EVANS** ... **DF LOADERS** ... **EVANS**  
 TO ELIMINATE DAMAGE & DUNNAGE

Circle No. 53 on Reader Service Card for more information

FLOW • FEBRUARY, 1954

### Whatever the Load . . . EVANS DF WONDER BARS Handle with Care!

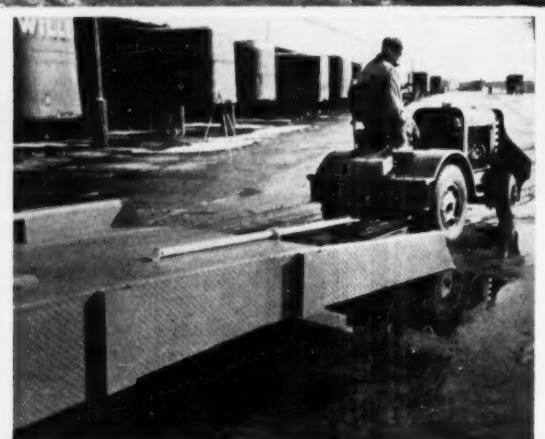


**THEY SECURE THE LOAD**  
Wonder Bars, placed against the lading, lock into side rails, hold the load securely, so it can't shake, shift or sway.

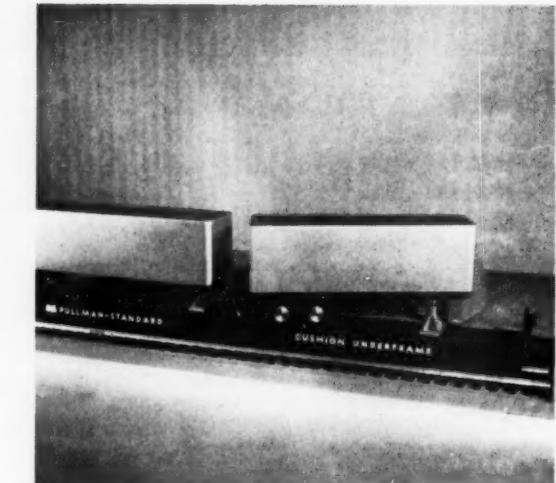
**THEY SUPPORT THE LOAD**  
Deckboards, placed on Wonder Bars permit multiple loads, no matter how fragile the lading. Floor to roof capacity!

**THEY SEPARATE THE LOAD**  
Wonder Bars and deckboard bulk heads divide lading into 2 to 9 compartments — each an easily handled, securely anchored unit.

EVANS ALSO MANUFACTURES THE  
FAMOUS AUTO-LOADER



**PORTRABLE MAGNESIUM RAMP** permits end-loading of flat cars without the necessity of spotting special dock or ramp at the end of a stub or dead-end track. This ramp may be placed at any point along the track where trailers are to be put on or taken off flat cars. This might be at either end or at each end of a string of cars, or at any point where it is desirable to break the string. It permits the carrier to exercise a great degree of selectivity in picking out the trailers it desires to unload first, and helps insure the speeding of "rush" freight to consignees. Inset shows how the rubber-tired ramp is towed anywhere in the rail yard through the use of a detachable tow bar and industrial tractor. The ramp weighs 4800 lbs., is 45 ft. long and nine ft. wide, but flares to 11 ft. at ground level. It can be positioned by two men, yet will hold even the heaviest loaded trailers with safety. For positioning at the end of a car, the unit is raised or lowered by means of a manually operated hydraulic system. Anchor stakes fit into pockets on end of flat car to secure the ramp.



**SIDE-LOADING FORK TRUCK** is being developed with 75,000 lb. capacity and with distance between forks variable to fit almost any size trailer. It permits side loading of cars without special dock. Truck can move back and forth between two rows of tracks, loading and unloading trailers at any point. It is rubber-tired, and is controlled hydraulically from the drivers cab. Length varies from 29 ft. to 40 ft.

# "Piggy-Back" . . .

A PROGRESS REPORT . . . here's what is being developed by manufacturers of material handling equipment.

Some people call it the "trailer-on-flat-car-system", others call it "piggy-back", and still others call it "trailers-on-flat-cars". A standard term, accepted and used by everyone, has not yet been realized. There is complete unanimity however, when one discusses the future of the trailer transporting method . . . it is growing fast, and is a factor to be reckoned with in the future of distribution.

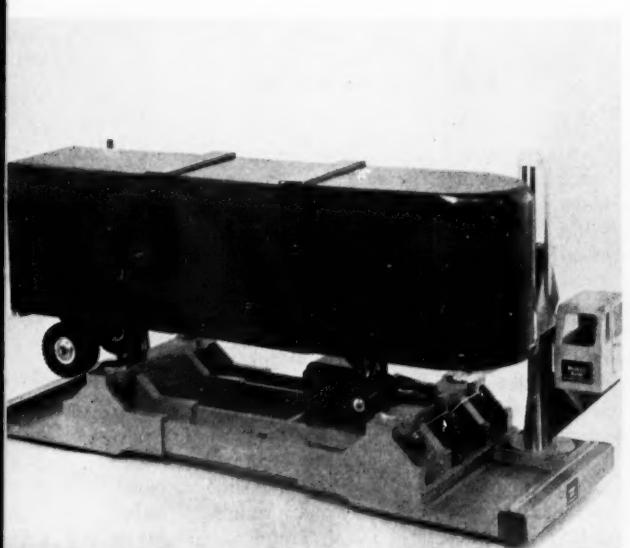
It is not really a new concept, at all. The Chicago, North Shore and Milwaukee Railroad first started hauling loaded highway trailers between Chicago and Milwaukee before 1930, but offered the service for only a short time. The method came into use again in 1935 when the Chicago Great Western Railroad originated a service between Chicago and Minneapolis. Since that

time, other lines, notably, the New York, New Haven & Hartford Railroad which handled more than 50,000 trailers in 1953, and the Denver and Rio Grande Railroad.

The "Piggy Back" idea teams up railroad flat cars with highway trailers for inter-city freight hauls. Instead of being driven over already jammed highways, loaded trailers are put on flat cars and moved by rail, where they do not compete with commuter and tourist traffic.

One of the biggest stumbling blocks to the entire system has been the difficulties in loading and unloading flat cars. "Circus-type loading", or "end-loading" has been used almost exclusively. Specially laid-out rail yards (called Trailiner yards by NY, NH&H)

(Continued on page 132)



TRAILER TOWING TRACTOR, now in final stages of design, will be three-wheeled unit which measures six ft. across and about 9½ ft. in length. Towing capacity will be 68,000 lb., elevating capacity 35,000 lb. Two sets of batteries one on each side, power the tractor. Although operated by only one man, two bucket type driver seats are utilized, one on either side of the steering wheel to permit driver to change positions.



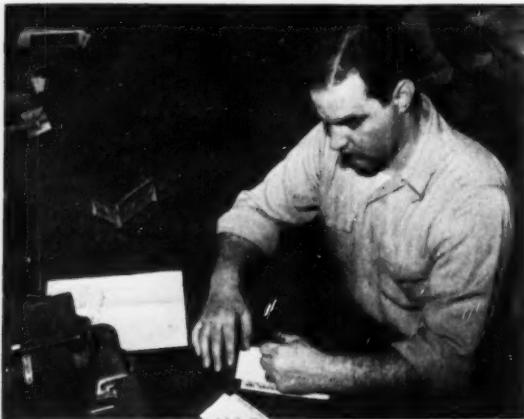
STANDARD 26,000 LB. FORK LIFT TRUCK is adapted to "piggy-back" by use of special attachment. Truck is modified with special short upright and standard side-shifter with toed-in forks that support a pin which fits into a recess at the front end of the trailer. After the lift truck has engaged the recess or "toe-plate" of the trailer, it maneuvers it aboard the rail car and locks it in place by dropping trailer kingpin into stanchion.

MARKING TIME REQUIRED		(OLD VS. NEW METHOD)	
OLD METHOD	TIME	NEW METHOD	TIME
Apply address to each container.	45 sec.	Count and Detach six labels	2 sec.
		Address labels by ball-point pen, six at a time,	45 sec.
		Moisten and attach six labels	3 sec.
Total time for six containers =	270 sec.	Total time for six containers =	50 sec.

TIME SAVED = 220 sec. or 81.48% of time formerly required.



SIX PACKAGES can be completely labeled in only 50 seconds with the method now being used by Waldes Kohinoor, Inc. In that time, the packager counts, addresses, detaches, moistens and attaches the carbon-back labels. Time under old method was 270 seconds.



SIX-AT-ONE-TIME . . . As many as six labels can be addressed at once through the use of the carbon-back labels. A ball-point pen is used. Errors are also reduced.

## Six-Times Faster Marking

. . . with Carbon-Back Labels

by Milo Waldes  
Asst. Factory Supt.  
Waldes Kohinoor, Inc.

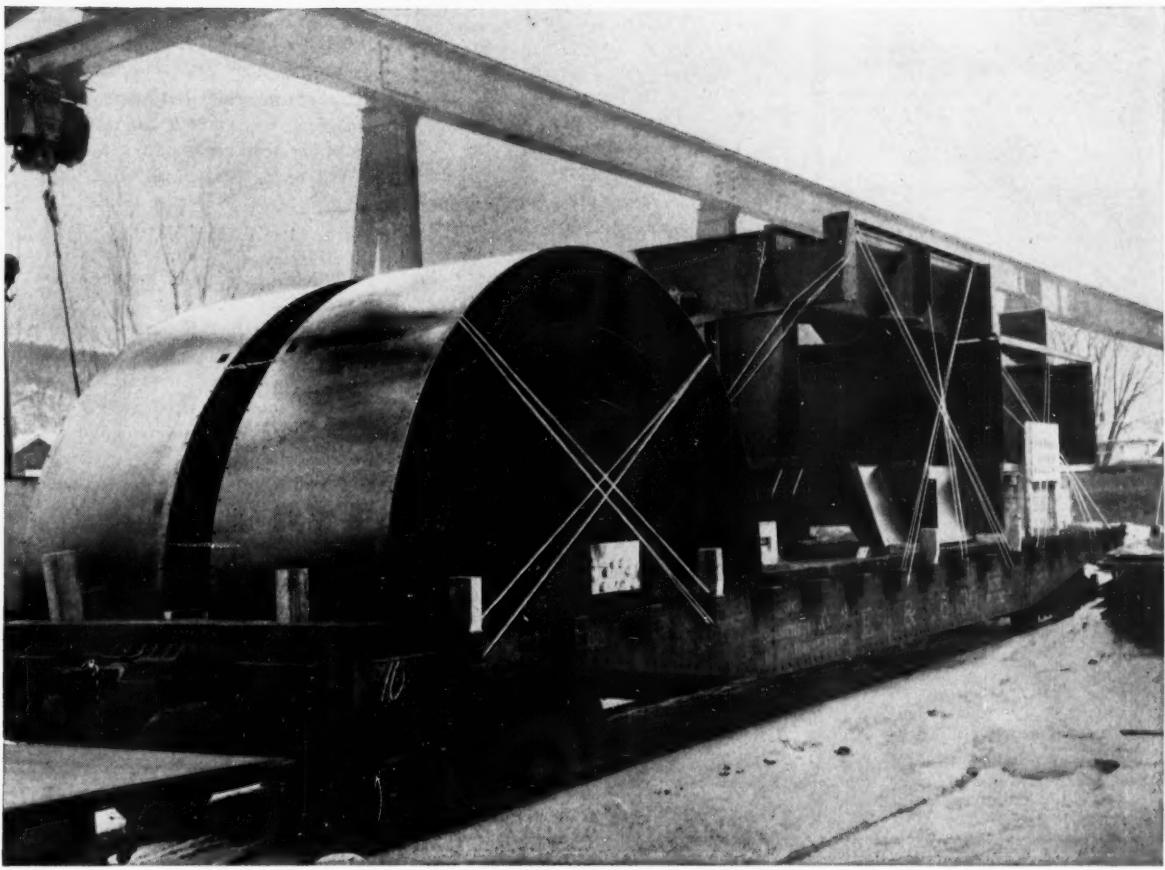
IF your company handles a heavy volume of standard pack shipments, chances are that you have an automatic or semi-automatic system that does the labeling and addressing quickly, efficiently and economically.

Suppose, however, that your shipping department must handle a steady stream of packages that doesn't lend itself to machine processing? Unless you have some fast and economical method for labeling and addressing the individual containers by hand, you run the danger of a shipping room bottleneck that in some cases can be extremely difficult and costly to untangle.

We at Waldes Kohinoor, Inc., were faced with such a problem. We manufacture Walde slide fasteners, Waldes Truarc retaining rings and a number of other fastening devices—all of which are produced in an unusually wide range of sizes and styles.

We found it practical to use standard-size shipping containers but the nature of our orders is such that the use of automatic addressing equipment isn't feasible—we have too many shipments going to different locations. Our order department can't type shipping labels when the orders are prepared because of variations in unit size—five large Truarc retaining rings

(Continued on page 120)



## Tie it safe with **U·S·S Gerrard Steel Strapping**

● There is a size and style of U·S·S Gerrard Steel Strapping to fit every tying requirement from carload to parcel post. U·S·S Gerrard Round Strapping, from 8 to 18½ gauge, conforms readily to odd-shaped and circular packages as well as to rectangular cartons and crates, and to conventional reinforcement applications.

U·S·S Gerrard Flat Strapping is available in heavy-duty sizes for carload reinforcement and palletizing. U·S·S Gerrard Tools for stretching and sealing Flat Steel Strapping are among the most modern and efficient now made.

Gerrard engineers are completely familiar with good tying and packaging procedures from carload to parcel post. Let a Gerrard engineer advise you about the tying method best suited to solve your tying problems safely and economically. His advice is available free of charge. Phone, write or wire for further information.

**GERRARD STEEL STRAPPING DIVISION**  
**UNITED STATES STEEL CORPORATION**  
2937 West 47th St., Chicago 32, Ill.

**U·S·S GERRARD**  
Round Steel **STRAPPING** Flat Steel



UNITED STATES STEEL

Circle No. 68 on Reader Service Card for more information

Circle No. 111 on Reader Service Card

**Speed Production on Shipping Operations**

**Two men do the work of four at Memphis Furniture Mfg. Company, Memphis, Tenn.**

The Power Line AB-6 Air Stapler can be used in the shipping department as well as for production work. When this manufacturer switched over to using the Power Line Staplers instead of hand nailing they found that two men could now get out the same shipping as four men formerly could.



If you are now using nailing, gluing or other conventional fastening methods, it will pay you to consider the speed, efficiency, and economy of Power Line Staplers.

**POWER LINE STAPLERS  
POWER WIRE PRODUCTS CO.**

1590 Monterey Pass Road P. O. Box 216  
Monterey Park, California Monroe, Michigan

Sales representatives:

Chicago—Memphis—New York  
San Francisco—Detroit

**MARKING . . .**

(Continued from page 118)

require the same size container as 100,000 small rings . . . and that is no exaggeration! We produce so many different sizes and styles that it is impossible to ascertain the type and number of shipping containers for an order until the units have been received by the shipping department.

The solution to our problem was a special label which permits us to address six containers in the same length of time it formerly took to do one. The labels are one-time carbon backed, gummed sufficiently around the edges of the carbon to insure proper adhesion. They are bound in pads.

When an order has been prepared for shipment, a clerk simply tears from his pad one to six labels, depending upon the number of containers making up the shipment. Keeping the labels stacked, he writes with a ball-point pen the necessary information on

the top label in the stack, thus making one original label and five carbon copies. Where more than six containers are destined for one location, he repeats the process as often as is necessary.

We have checked carefully the time it takes to make a label by ball-point pen and have found it identical to the time required for each address by our former one-at-a-time method. As the chart accompanying this article indicates, because we now get six labels for each writing operation, we have effected a time saving of 31.48% for each six packages to be addressed.

In addition to speed, we have gained another advantage: accuracy. Since label and address information need not be written as frequently as in the old method, we have lessened the possibility of error in transportation.

The system has expedited our shipments and, in terms of economy and efficiency of operation, has more than paid for the initial cost of new labels.



**Counterboy ADJUSTABLE MOISTENING CONTROL:**

- Protects your Product • Saves your tape • Saves your labor costs
- Improves your carton's appearance • Impresses your customers

The counsel of Better Packages' 70 Counterboy field experts on materials and methods is yours for the asking. They can help you:

- Reactivate all the glue on your sealing tape • Select special purpose tapes
- Train employees to apply tape correctly
- Saves time and tape • Systematize your tape closure procedure



**GEORGE LEBHERZ**, a typical Counterboy man, has an enviable reputation helping packers make each sealed carton a good will builder.

His broad packaging knowledge is based on 17 years working to help shippers, first in Chicago, and later in central Illinois and Indiana, with headquarters at Indianapolis.

Your Counterboy man is listed in the yellow pages of your phone book. Call him today.

**Better Packages, Inc.**

SHELTON, CONN.

WORLD'S LARGEST MANUFACTURERS OF TAPE DISPENSERS

**FREE** WRITE FOR TECHNICAL BULLETINS.

**BETTER PACKAGES, INC.**

PLANT NO. 1-D, 253 CANAL STREET, SHELTON, CONN.



#3 Tape Moistening Requirements for Various Carton Surfaces

#5 Gummed Tape Glues and Adhesives

#6 Sealing Carton Corners

#7 Superiority of Gummed Tape Closure

#9 Tape Applications — Building Strength from Weakness

#12 Carton Sealings — The Easy Way

#13 Parcel Post Wrap

#16 Tape Widths and Weights

Send us a Counterboy man to survey our Methods and Materials

Company \_\_\_\_\_

Signed \_\_\_\_\_ Title \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Circle No. 20 on Reader Service Card for more information

## VIBRATION . . .

(Continued from page 114)

a car running 50 mph will vibrate at the rate of 4.45 cycles per second.

The amplitude at which the car will vibrate will depend upon how heavily the car is loaded. The average railway car spring has a movement of about  $1\frac{1}{16}$  inches from free position to solid position. When a spring bounces to a solid position, the shock to the lading is severe. If the weight of lading is such that the frequency of the vibration activated by the rail joints is the same as the natural frequency of the spring nests, the car will go into resonance, will bounce violently and will be very destructive to the lading.

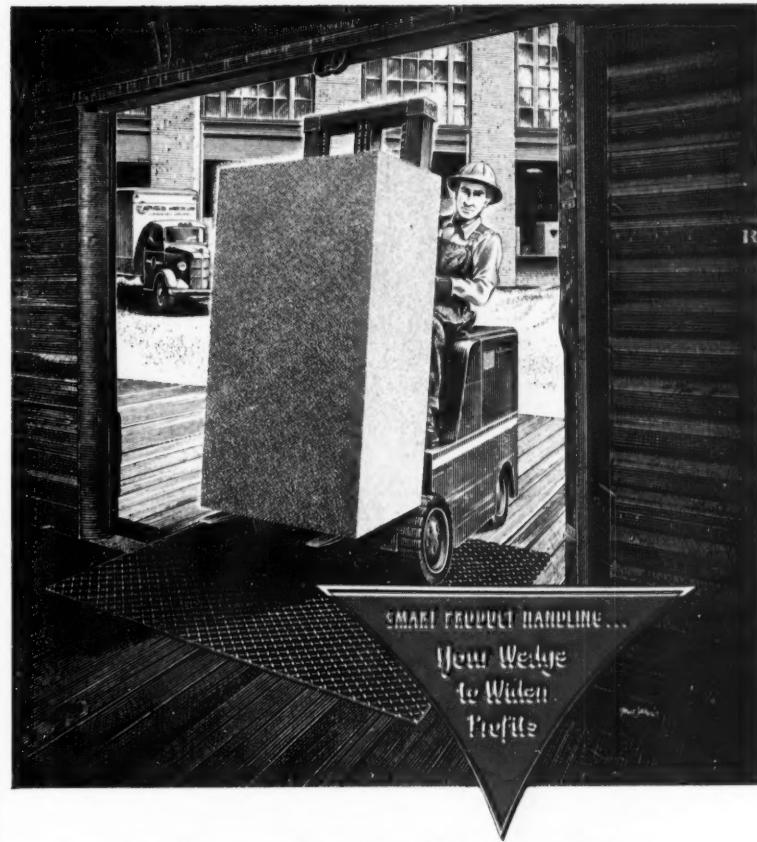
This condition can be duplicated on a properly designed vibration test machine. It has been found that a testing machine with a total throw (displacement) of one-inch and an attainable frequency range from two to six CPS will give a range of tests simulating most shipping hazards.

Generally, vibration testing equipment consists of a table supported on one or two eccentric shafts, one under each end of the table. The shafts cause the table to vibrate with a circular motion in the vertical plane. On two-shaft machines, the speed of each shaft may be controlled independently so that they might be in phase or out of phase with each other.

As a result, the table has a mixed motion and a "pitch and toss" in addition to vertical and horizontal vibration. A "fence" can be mounted on the table to repeatedly bump a package being tested and to give it shocks similar to bumps which occur during starting, moving and stopping of vehicles.

*FLOW'S thanks to L.A.B. Corp. for the information contained in the preceding article.*

F.D.  
is here !!!  
(See page 145)



## An Expensive Packing Problem Has Disappeared Inside This Gaylord Box

Over-all packing costs were too high. Loading and unloading of freight cars involved too much manual labor. Gaylord solved both these problems with a special box entirely new to the industry.\*

Such new Gaylord ideas in corrugated and solid fibre containers may help make your packing and product handling methods as up-to-date as the rest of your plant.

From a ton load of bulk material to tiny tropical fish, the list of products shipped in boxes engineered by Gaylord's Research and Development Division grows larger every day.

For information on the newest developments in your field, call your nearby Gaylord office.

\*Case history on request

## Gaylord Container Corporation

GENERAL OFFICES  
SAINT LOUIS, MO.

SALES OFFICES  
COAST-TO-COAST



CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES

Circle No. 57 on Reader Service Card for more information

**53 YEARS OF BETTER BOXES - "THE American WAY"**

*How to ship 17 lbs  
for FREE!*



(right) American Protection - Engineered Wirebound Crate, costs less; easier, handier to use—wt: only 29 lbs.

(container at top) Heavy wood crate by motor manufacture splintered in transit wt: 46 lbs.

## American Wirebound Pays Big Bonus to Shipper.

Saving 17 pounds of container is the same as shipping 17 pounds of product transit-free. This neat, sturdy American Wirebound does just that. It was specially designed to replace a clumsy wood crate for carrying heavy electric motors at **lower cost for container, shipping and manhours in packing and unpacking, while eliminating all concealed damage.** How many pounds of free shipping would an American Wirebound give you? Send your product for a sample packing—there's no charge, no obligation. Write, wire or phone today.

\*Thousands of acres of timber, two veneer mills, two great plants in Cleveland, Ohio, and Marion, S. C.



## THE American BOX CO.

1909 W. 3rd Street  
Cleveland 13, Ohio

Phone: SU 1-4900

Marion,  
South Carolina

Circle No. 3 on Reader Service Card for more information

## What's New . . .

in Packaging & Shipping  
Free Literature

### Modernized Bag Making:

A new illustrated bulletin on the manufacturing of bags has been issued recently by Union Special Machine Co. Stressing the need for stepped-up efficiency as a means of lowering unit bag costs, the new brochure, Bulletin 262, points out that this important advantage can be obtained through the use of new improved machinery.

Circle 230 on Reader Service Card

### Dependable Tape Sealer:

Why some gummed tapes stay stuck and others peel loose is explained in literature available from Better Packages Inc., in describing Counterboy 120 tape dispenser. Adjustable moistening control is said to be the feature which assures tight permanent seal under all tape sealing conditions. The literature also tells how a free trial use of the machine can be had in your own shipping room.

Circle 231 on Reader Service Card

### Learn More About Impacts:

A vector nomograph, offered free by Impacto-Graph Corp. will help you to study impacts which occur during shipment. The nomograph takes records from standard three stylus impact recorders and tells you exact magnitude and direction of impacts. Literature includes complete information necessary for use of the nomograph.

Circle 232 on Reader Service Card

### Instant-Seal Wrapper:

Sherman Paper Products Corp. has a data sheet available which describes Spot-Seal, a tough kraft sheet, with a special non-corrosive adhesive coating on one side. Wrapped around your product it provides an instantly sealed wrapper that is watertight, dust-proof and which requires no staples, tape or fasteners of any type. It is adaptable to hand or automatic packaging methods and



American Wirebound Crate,  
Tote Box, Pallet



American Fibreboard Box



American Nailed Wood Box

sticks only to itself.

Circle 233 on Reader Service Card

### Weather-Sealing:

An interesting book entitled "We Took A Lesson From Nature" is available from the R. M. Hollingshead Corp. telling the story of its unusual development of a fibrous coating for machinery and other products to protect them from the elements while in transit or in storage. The material is called "Cocoon," because it resembles the protective covering some insects weave about themselves during hibernation. The coating is applied with a spray gun, hardens to a tough air-tight blanket that strips off like a banana peel when removed.

Circle 234 on Reader Service Card

### Fibre Containers:

Standard and custom packaging containers are described in a catalog available from the United Can Co. Inc. The booklet lists numerous standard sizes of the fibre bodied tubes with metal bases and covers. Specifications for military requirements also may be obtained for those needing a suitable container for delivering their product to the armed services.

Circle 235 on Reader Service Card

### Export Packaging:

Dade Brothers have literature available explaining its new and complete export packaging service from the Norfolk terminals. Expert packaging for safe delivery overseas is claimed in the illustrated brochure with assurance of safe arrival at destination of the smallest, bulkiest and heaviest of shipments.

Circle 236 on Reader Service Card

### Unit Packaging:

Protective packaging for individual parts used on the assembly line in manufacturing plants is explained in literature available from Pak-Rapid Inc. The company's product, Auto-Pak, seals each part in an individual cellophane wrapper that protects its finish and makes it easily identified. Automatic machinery performs the packaging operation which would naturally be costly if done by hand.

Circle 237 on Reader Service Card



## How to make 150 containers disappear

*Another example of packaging magic that couldn't be performed without Signode Steel Strapping!*

The pallet load shown here contains 150 sub-assemblies, nested on returnable wooden trays, packaged for easy handling and shipping by strong bands of tensioned Signode Steel Strapping.

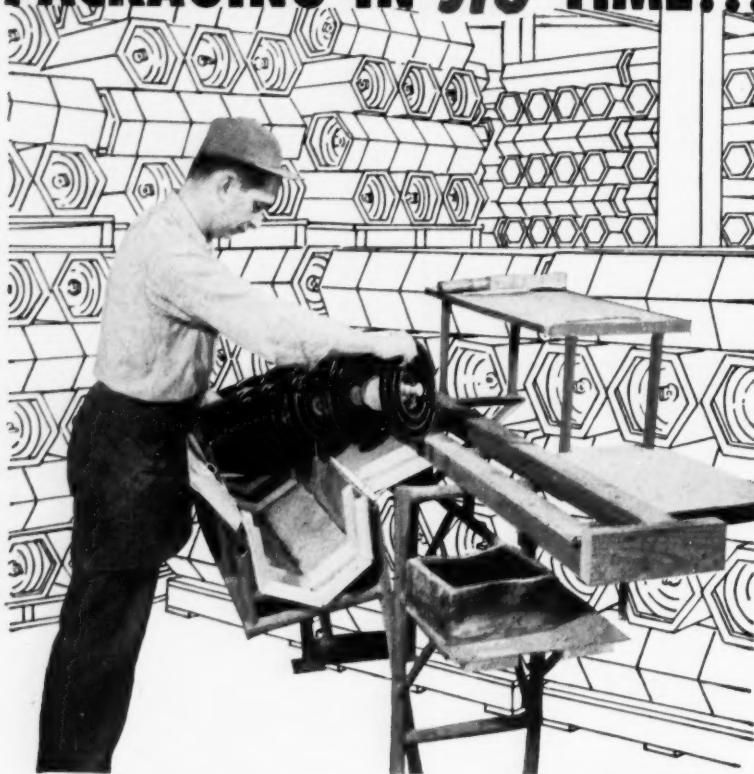
This method of packaging eliminated the use of 150 individual containers, and the materials needed to pack and seal them. Units were handled *once*—at the assembly line, where they were placed on the trays. Strapped to the pallet base, which also served as a tray, the trays became a single, pilfer-proof unit, easily handled by *one* man and a fork truck!

If you now ship by pallet or have products which can be shipped that way, and the economies apparent in this method of product packaging, handling and protection interest you, we will gladly supply detailed facts. Write Signode Steel Strapping Co., 2618 N. Western Ave., Chicago 47, Ill. Offices coast to coast. In Canada: Canadian Steel Strapping Co., Ltd. Foreign subsidiaries and distributors world-wide.

**SIGNODE** Steel Strapping Co.

SEND FOR FOLDER SHOWING 6 BASIC WAYS OF UNITIZING  
Circle No. 122 on Reader Service Card for more information

# PACKAGING IN JIG TIME...



**cut packaging costs 25%**  
**with GENERAL ENGINEERED CONTAINERS**

Packaging six porcelain insulators in a bulky nailed crate was a time-consuming two-man operation at Victor Insulators, Inc., Victor, New York. Introduction of the sturdy, lightweight General Wirebound Box and the jig-assembly system shown here enabled Victor engineers to reduce packaging to a quick, efficient, one-man operation, cut packaging costs by an estimated 25%. And their customers benefited by the substantial saving in on-site uncrating time—now a matter of seconds, thanks to General Wirebound Design.

This is only one example of hundreds of packaging problems solved each year—at a saving—in General Box Company's two fine Industrial Packaging Laboratories. General packaging experts stand ready to help you cut costs, too. Write today for complete details.

*Find out how other manufacturers are cutting packaging costs. Write for your free copy of "The General Box."*

**General Box COMPANY**



1857 Miner Street  
DES PLAINES, ILL.



Factories: Cincinnati; Denville, N.J.;  
Detroit, East St. Louis, Kansas City,  
Louisville, Milwaukee; Prescott,  
Ark.; Sheboygan; Winchendon,  
Mass.; General Box Company of  
Mississippi, Meridian, Miss.; Con-  
tinental Box Company, Inc., Hous-  
ton, Texas.

#### ENGINEERED SHIPPING CONTAINERS FOR EVERY SHIPPING NEED

- Generalift Pallet Boxes      • Corrugated Fiber Boxes      • All-Bound Boxes
- Cleated Corrugated and Watkins-Type Boxes      • Wirebound Crates and Boxes

Circle No. 143 on Reader Service Card for more information

124

## PACKAGING & SHIPPING LITERATURE

*Continued*

### Automatic Twine Sealing:

If you use twine for closure of packages or for bundling, etc., you will be interested in literature offered by Gerrard Steel Strapping Division of United States Steel Corp. It tells about the Gerrard B.S.M. Automatic Twine Sealing Machines, which are available in a 10" model and a 14" model. The machines use metal seals to offer greater efficiency than is possible with conventional knot ties.

Circle 238 on Reader Service Card

### Taping Equipment:

Information on Better Packages' 47 dispensers with attachments, for all tapes—gummed kraft, cloth, fibre reinforced, pressure sensitive, etc.—is contained in Broadside CP502 from Better Packages, Inc. Circle 239 on Reader Service Card

### For Better Shipping:

The current issue of Signode Steel Strapping Company's house organ, *The Signode Seal*, features articles by important figures in the Association of American Railroads. These articles deal with moving goods in an undamaged condition. The ways in which steel strapping has helped to prevent loss and damage are highlighted.

Circle 240 on Reader Service Card

### Portable Stapler:

The "Boxer", a lightweight portable stapler, is described in literature available from International Staple & Machine Company. It is said to be ideal for small volume shippers and for odd-job closing. To prevent damage to the contents of a box, a penetration control feature is incorporated to make concealed clinching possible.

Circle 241 on Reader Service Card

### Self-Reinforced Container:

Keg-Pak, a container for heavy bulk goods, is described in a bulletin from General Container Cor-

poration. It is said not to be just a keg, or just a carton, but a compact, three-piece corrugated unit for safe, economical shipping.

Circle 242 on Reader Service Card

#### How To Use Tape:

A folder from Polyken Industrial Tape demonstrates the most simple, effective techniques for packaging with high tensile tape. It shows in dimensional diagrams how to tape a package to secure the utmost in sealing and reinforcing performance. It also illustrates how to seal cartons of various sizes which require a tape of high tensile strength.

Circle 243 on Reader Service Card

#### Reinforced Waterproof Papers:

Thilco Wrap-Dri dispersed fibre reinforced waterproof protective papers are described in literature available from Thilmay Pulp & Paper Company. Four standard grades are listed, and their advantages are pointed out.

Circle 244 on Reader Service Card

### A. J. GERRARD & COMPANY

### STEELBINDER

#### complete strapping kit



SOLD OUTRIGHT

convenient,  
all-metal kit,  
with self-  
dispensing  
strip feature

A complete, portable strapping unit, containing a two hundred foot coil of strapping. Self-dispensing feature provides for easy removal of any desired length. Strapping is available in  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ " widths and all gauges. For special uses, aluminum, monel, copper, brass, stainless and galvanized strap and seals are available from stock.

#### STRAPPING, TOOLS & ACCESSORIES

Phone or Write Today for Full Information  
SALES-SERVICE OFFICES IN PRINCIPAL CITIES

### A. J. GERRARD & COMPANY

main office and factory

1960 HAWTHORNE COURT  
Melrose Park, Ill. (Chicago Suburb)

#### WAREHOUSES IN

NEWARK      CLEVELAND      LOS ANGELES  
OAKLAND      PORTLAND      BIRMINGHAM

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FLOW • FEBRUARY, 1954

Circle No. 23 on Reader Service Card for more information

Investigate  
this new  
combination



BLACK DIAMOND      AUTOMATIC  
CONTROLLED  
WEIGHT

### Valve Bag Packer AND BAG SETTLER

ACCURATE  
FAST  
SIMPLE  
CLEAN  
MODERATELY  
PRICED  
PERFORMANCE  
GUARANTEED

### BLACK PRODUCTS COMPANY

13513 S. Calumet Ave., Chicago 27, Ill., Dept. P-30

MANUFACTURERS SINCE 1912

**IDEAL** EQUIPMENT FOR YOUR SHIPPING DEPARTMENT

**IDEAL STENCIL MACHINE**  
Exclusive Automatic Carriage. Minimum Margin Grip. Three Popular Letter Sizes.

**A. HANDY-A FOUNTAIN STENCIL BRUSH**  
Natural Grip. Push-Button Ink Control.

**B. STENCIL INK** Easy-Flowing. Black and Colored.

**C. CLIP-A-TAPE** Moistens, measures, cuts up to 3-ft. Gummed Tape in  $\frac{1}{2}$  Second!

**D. STENCIL BOARD** Clean-Cutting, Long-Lasting.

**FREE SHIPPING GUIDE!** Important time and money saving hints for your shipping department. Fully illustrated. Write for your copy today!

**IDEAL STENCIL MACHINE CO.**  
104 IOWA AVE.

Circle No. 74 on Reader Service Card for more information

# WHAT'S NEW... in Packaging and Shipping Equipment



## One-Piece Shipping Box

This one-piece corrugated shipping box is providing substantial savings in handling and packaging time for General Electric Co., Fort Wayne. Produced by Hinde & Dauch, as one of the manufacturers, the box features flaps that are die cut to form a multi-cell box. Now, it is not necessary to stock extra partitions which must be inserted into the box to secure the contents.

**Circle No. 221 on Reader Service Card for more information**



## Versatile Marker

The "Magic Marker," manufactured by Speedry Products, Inc., is a throw-away bottle marking unit with the ability to write on a great variety of surfaces. It writes with a felt tip which has been designed to permit fine, medium and bold one-stroke marking. When ink supply in a bottle is exhausted, the nib section is unscrewed, attached to a fresh refill, and marking can resume.

**Circle No. 222 on Reader Service Card for more information**



## Spray-on Stencil Inks

Stencil inks in aerosol dispensers are available from Reynolds Industries, Inc. Available in Black, White, Red, Blue, Green, Orange, and Yellow, the inks are quick drying and waterproof. They are easy to apply, and cause no wear on stencils. Recommended uses are the stenciling of cartons, crates, boxes, metal, etc., and as a design layout fluid.

**Circle No. 223 on Reader Service Card for more information**



## Easy-Open Packages

A new cross-tape unit developed by Package Machinery Co. for its FA adjustable wrapping machines is said to provide the easy-opening feature used on cigarettes etc., for large and medium-sized packages. The unit locates cellophane tape at the end of the package, or any location in relation to its length. Many colors of tape in widths of 3/32" or 1/4" are available.

**Circle No. 224 on Reader Service Card for more information**

*(Continued on page 133)*



## Not when you use KIMPAK® 301 !

New KIMPAK 301 is the practical solution to appliance surface scratching and other marring damage. KIMPAK 301's ability to shield the fine finish from abrasive high spots on the inner walls of cartons and blocking and bracing members of crates makes it the ideal protective agent in an appliance package. And KIMPAK 301 costs no more than ordinary materials. It is specially designed to prevent the three major causes of scratching:

**1. Abrasiveness of the inner spacers.** Kimpak 301 provides a scratch-free, non-disintegrating, compressible barrier between inner spacers and the appliance finish. Its conformability ensures a snug package.

**2. Dust, dirt, cinders that sift into the container.** The combination of high creping and porous structure—exclusive with KIMPAK—traps dirt, grit or cinders, which may lodge between the packaging material and the surface.

**3. Abrasive action of harsh packaging materials.** KIMPAK 301 is soft and non-abrasive... free from wood splinters, dirt and other abrasive materials. No lumps, hard glue spots or stiff wrinkles.

Scratching is but one of many problems encountered in appliance packaging. These problems are solved with KIMPAK 301. For more details, contact the KIMPAK distributor in your area, or mail coupon below.

### SPECIFY KIMPAK 301 TO SOLVE THESE INTERIOR PACKAGING PROBLEMS:

Scratching  
Pressure-marking  
Staining  
Corrosion  
Conformability  
Ease of handling  
Appearance  
Disintegration

Whatever your protective interior packaging requirements, there is a Kimpak specification that does the job... better!



A Product of  
**Kimberly-Clark**

Circle No. 79 on Reader Service Card for more information

KIMBERLY-CLARK CORPORATION  
Neenah, Wisconsin

Dept. FL-24

We would like to learn how new Kimpak 301 can provide better protection at lower cost for our products. Please send complete information.

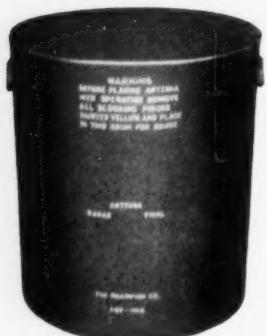
Name \_\_\_\_\_

Firm Name \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# Shipping Containers DESIGNED TO FIT YOUR PRODUCT



Hermetically Sealed

A REUSABLE shipping container can be designed and produced for your product, regardless of size or shape . . . with perfect protection for shipping and storing. If you are interested in perfect protection for your product, and at the same time reducing your costs . . . Write to

**THE CHAMPION  
COMPANY**

SPRINGFIELD 99, OHIO

Circle No. 31 on Reader Service Card  
128

## PORTRABLE CONVEYORS . . .

*Continued from page 75*

### Where each type fits

If a conveyor does not have to be moved frequently, the carry type is usually logical. If moves are often required, the mobile wheel or roller and powered belt conveyors are indicated—to save set-up time.

In warehousing, where items are for the most part stationary, and no greater than, say, 20 percent of the space is involved each day—even though the used area varies from day to day—80 percent of permanent conveyors would be idle. Therefore, mobile or telescopic conveyors would be the wisest investment since only enough need be bought to serve the 20 percent of space that would be used in any period.

### Gravity Wheel Conveyors:

Wheel units are intended to handle any container, carton, crate, package or part which has a flat, smooth bottom. Usually, they are set on inclines, the amount of which varies with the

weight of the material to be carried. Surface of the package is also highly important. A light package with a good, smooth bottom will carry at a less angle than a heavy package with a soft or wet bottom. Bags can be moved on wheels if they are heavy kraft paper and well packed, and if a sufficient number of wheels is provided. The number of wheels per foot and the width of conveyor are the principal variables to be considered in ordering a wheel conveyor. They are determined by the size, type, and weight of items to be moved.

The heavier the object the greater the number of wheels that will be required. Small items, too, require more wheels per foot for adequate support and mobility. If the bottom of a container is, for example, corrugated board, it will be necessary to support it with more wheels than a perfectly smooth surface would require. It is generally accepted that no less than 8 wheels should be under the item at any time. (Conveyor sales personnel can help decide which unit will do the best job for a given product.)

**Easy to use . . . Easy to clean**

**... Easy to service**



## DERBY SEALER

For Shipping Room and Production Line Packaging

• Rugged simplicity aptly describes the Model 32. Derby's exclusive, one-piece solid casting eliminates parts and provides added rigidity. What's more, the Model 32 is easy to clean, even during the hot summer months when machines tend to "gum-up."

• The Derby Model 32 accommodates any tape from 1" to 3" wide. Delivers from 4 inches to 34 inches of tape at one stroke.

• Derby's exclusive "moisture-control" system maintains a maximum high water level in the tank to assure a constant supply of water to the brush, no matter how fast tape is dispensed.

• Also available is the Model 32-T with tool steel shear-type blades for cutting reinforced strapping tapes. Blades have two cutting edges to double their useful life before resharpening.

*For further information, write Dept. F*

**DERBY SEALERS, INC.  
Derby, Connecticut**



Circle No. 41 on Reader Service Card

FLOW • FEBRUARY, 1954

## PORTRABLE CONVEYORS

*Continued*

Although wheel conveyors are generally designed for relatively light loads, they will carry up to about 850 pounds of live load for every 10 feet of conveyor, with frequently spaced supports.

### Gravity Roller Conveyors:

Roller conveyors are usually recommended for heavier loads, those of large size and of irregular or uneven bottom than would be accommodated on wheels. They will handle such items as boxes, cartons, crates, baskets, milk cans, bottle bases, and large machine elements. Spacing between rollers is variable to accommodate different sizes of objects carried. In selecting a roller conveyor the general rule is to be sure there will be a minimum of three rollers under the shortest item to be carried. Weights to 85 pounds per foot can be carried on rollers with supports at only every 10 feet.

### Powered Belt Conveyors:

Just about any object or ma-

terial can be carried on portable belt conveyors, within weight tolerances—which run from an average of about 50 pounds to a high of as much as 500 lbs. They can be used independently or in conjunction with wheel or roller conveyors.

Heights are easily adjustable. Belts for handling packages usually have rough surfaces, but cleats are also provided for steep elevations. Bulk handling belts are usually smooth with cleats.

For assistance on and illustrations for this article, FLOW thanks:

*Alvey Conveyor Mfg. Co.; Alvey Ferguson Co.; Barber-Greene Co.; Belt Corp.; E. W. Buschman Co.; Chantland Mfg. Co.; Conveyor Specialty Co., Inc.; A. B. Farquhar Co.; Harry J. Ferguson Co., Inc.; Island Equipment Corp.; Frank A. Kremser & Sons, Inc.; Magline, Inc.; Mechanical Handling Systems, Inc.; Metzgar Co.; Rapids-Standard Co.; Sage Equipment Co.; Speedways Conveyors, Inc.; Standard Conveyor Co.; and The Wilkie Co.*

**Here's how  
to close**

## MULTIWALL PAPER BAGS



Union Special Style  
20100 H Bag Closing  
Machine

**MARSH**

**STENCILS**  
*Deliver The Goods!*



### New, faster marking system simplifies shipping!

Yes, put away non-permanent tags and labels, eliminate tacking, stapling, gluing of addresses. Simply apply MARSH stenciled marking directly onto your shipments. Bold, easy-to-read  $\frac{1}{2}$ ",  $\frac{3}{4}$ " and 1" letters. With either electric or hand operated machines it's faster, and costs you less than complicated methods. Ask us for proof today.

For more information or a free demonstration mail us this ad with your name and business letterhead.

**MARSH**

MARSH STENCIL  
MACHINE CO.  
67 Marsh Bldg.  
Belleville, Ill.

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FLOW • FEBRUARY, 1954

## How To Protect Your Inventions

Completely told and illustrated in the greatest book on patents  
**"INVENTIONS AND THEIR PROTECTION"**

By  
**GEORGE V. WOODLING**  
The Well Known Engineer  
and Attorney Specializing  
in Patent Law

### IT TELLS YOU . . .

- how to make your patent pay
- how to prove you are entitled to your own inventions
- how to file for a patent
- how to avoid delays
- how to enhance the value of patents
- what points to consider
- Rules to follow
- who owns the patent—the employee or the employer.

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Special Bag Closing Machines!  
Specially built to stand up under  
heavy production schedules,  
these machines provide the high  
output rates needed to meet  
modern competitive conditions.

In the Union Special line, it's  
easy to find the right unit to  
meet your requirements. ASK  
FOR RECOMMENDATIONS.

### SEND FOR THIS BULLETIN!

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Ask for a copy of Bulletin No. 423, "UNION SPECIAL FILLED BAG CLOSING MACHINES."



**Union Special**  
MACHINE COMPANY  
415 N. FRANKLIN ST., CHICAGO 10, ILL.  
Circle No. 132 on Reader Service Card



SPECIALLY EQUIPPED BOX CARS are used by Tennessee Eastman Co. for shipment of fibre drums containing plastic pellets. Steel and wood cross-members lock securely into wall belt rails which are welded to

steel car posts. Drums of uneven size are usually loaded near the roof of a car as shown above. Frequent spacing of wall belt rails, into which cross members are locked, gives a variety of load-locking combinations.



## Safe Shipping Method

DECKBOARDS laid on top of floor level deck of drums provide flooring for second deck load. Note that each deck is locked into position in relatively small sections. This makes for convenience in "stop off" deliveries and helps insulate entire load against impact damage.



**COMPLETELY LOADED** half of car. Note doorway belt rail members at right which make loading across doorway area possible without the need for costly bracing. Space is used all the way up to the ceiling.



**WALL BELT RAILS** are spaced from floor to roof at intervals of about 10 inches. Perforations at top edges of rails, at one inch intervals hold two-fingered steel end-fittings on cross members firmly against the load.

## For Easily Damaged Material

*Problem: Assume that you are shipping basic plastic pellets (that are made in over 30,000 different colors and shades) from a southern plant to west coast warehouse and distribution points. Method of shipment is boxcar.*

*Because your customers prefer them, you are using fiber drums of about 45-gal. capacity, weighing between 250 and 270 lb., when full. Although durable enough under ordinary circumstances, the drums are not indestructible, and you have had considerable trouble with containers arriving at the destination broken, with steel lids popped, and with contents dribbled out on the car floor. Damage claims often run from \$300 to \$1500 per car-load.*

*How would you continue to provide the plastic pellets in the containers requested by customers, and still reduce claims and shipping costs?*

**T**HE ABOVE problem faced J. B. Gillis, traffic manager of the Tennessee Eastman Co., a division of Eastman Kodak Co. The firm is a manufacturer of methanol for Eastman photographic film, a leading supplier to plastic, textile and chemical industries and the manufacturer of more than 250 products, none of which go directly to the consumer.

Until recently, shipments had been made by Tennessee Eastman in ordinary box cars using wood-and-nails dunnage. Damage loss could be counted on for every car-load shipped. With 30,000 different colors, the plastic pellets (trade named Tenite), must be pro-

tected from contamination from the time of shipment to time of receipt by customers. Even the slightest amount of dirt or dust changes the delicate color balance of the plastic and makes it worthless to everyone except a few salvage men whose outlets are not particular about matching colors. A single box car might contain Tenite in more than 20 different colors, each enclosed in its own steel-lidded container.

### Lading Method at Fault

It was decided that much of the trouble could be eliminated by a change in the method of lading. Spe-

*(Continued on page 154)*



## These labels were printed and marked in one operation

(at the rate of 100 per minute)

Preparing quantities of shipping or product identification labels for a multiple shipment is a costly, time-consuming operation. But not for those shippers using the Weber KC-E Label Printing and Addressing Machine.

For instance, in 30 seconds the KC-E can print 50 labels and fill in the consignee's address at the same time. It also counts the labels to give you a check on shipment quantity. It even cuts them to the exact size you want. The KC-E prints from an inexpensive stencil that can be die-cut to reproduce your present label. Variable information is then typed in.

If you are now preparing quantities of labels with the same information, it will pay you to find out how the Weber KC-E can save you time and labor. Take advantage of the offer below.

*another*

## Weber system

Weber Label and Marking Systems  
Div.—Weber Addressing Machine Co.



Clip this to your letterhead for sample packet and folder.

Name \_\_\_\_\_

Title \_\_\_\_\_

Weber Label and Marking Systems  
Dept. F-7, Mt. Prospect, Illinois

Circle No. 138 on Reader Service Card  
132

## PIGGY BACK . . .

(Continued from page 117)

with end-track ramps to handle trailers are required for efficiency. When flat cars are set against the ramp, trailers are moved over a continuous bridge formed by each car's spring apron brow, folded down. To load a train consisting of approximately eight to 12 cars, requires an average time of about six minutes.

Some effort is made to put trailers onto trains in a sequence which will permit their removal in order of urgency. This cannot be controlled completely, however.

Devices being worked on by manufacturers of material handling equipment promise greater speed and flexibility for "piggy-back" in the future. They vary from special portable ramps made of light-weight magnesium to mammoth fork trucks which can carry loaded trailers to any point in a yard and deposit them on flat cars.

The Pullman-Standard Car Manufacturing Co. and Electromotive Division of General Motors are both working on development of

special flat cars to work hand-in-hand with loading devices.

Proponents of trailers-on-flat cars claim that the method will be advantageous to truckers and shippers alike. For the truckers, they predict cuts in insurance rates, reduced maintenance costs, an easing of the problem of getting experienced truck drivers, since fewer would be needed. They also foresee the use of smaller equipment for short hauls at both ends of runs, further reducing costs.

For shippers, it is claimed that there will be less handling of merchandise, and thus, less damage . . . shipping costs will be lower . . . more accurate shipping schedules will be possible when shipping trailer loads directly from one plant to another.

*Flow's thanks to the following for assistance in preparing the preceding report:*

*Automatic Transportation Co.; Baker Raulang Co.; The Buda Co.; Clark Equipment Co.; Gerlinger Carrier Co.; Magline Inc.; Magnesium Co. of America; Dan Sundel, manager of Trailiners, New York, New Haven, and Hartford Railroad, Pullman Standard Co.*

## NOLAN ONE-MAN CAR DOOR OPENER



Opens Doors in 20 seconds  
or less!



The Nolan Car Door Opener gives one man a tremendous amount of pulling energy, to get the most stubborn, hard-rolling door wide open in a hurry! New chain has 2000 lbs. tensile strength.

No gears needed. No moving parts, limbs or loss of life. A few quick pulls on anchor chain gets any door open in a jiffy. The NOLAN saves its low initial cost in first hour of operation.

New safety and efficiency features now make the Nolan 1-Man Car Door Opener a more necessary labor-saving money-saving help than ever before.

Many thousands in  
constant daily use!

Free Literature. Order  
one or more NOLAN Model-H Car Door Openers  
now. Catalog on request.

\$3750

The NOLAN Co.,  
100 Pennsylvania St.  
Bowerston, Ohio  
F.O.B. Bowerston

**NOW!** Load and Unload  
Protected from  
RAIN • SLEET • SNOW



**ELWING** Weather Screens  
Low Cost Dock Covers

All Weather Protection for  
Materials, Men, and Machines

★ Warehouse to Boxcar

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Representatives in all principal cities.

The Elwing Corp., Dept. F  
915 W. Adams St., Jacksonville 4, Fla.

Please send me information about Elwing.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Circle No. 102 on Reader Service Card

Circle No. 50 on Reader Service Card

FLOW • FEBRUARY, 1954

## PACKAGING & SHIPPING NEW EQUIPMENT . . .

(Continued from page 122)

### Grease-resistant Coating

A grease-resistant interior coating, designed to prevent oil from soaking through corrugated shipping containers has been successfully tested by Gaylord Container Corp. It was developed for



use by Southern Pecan Shelling Co. for use in shipping shelled pecans and has eliminated a former problem of oil soaking through the case to the outside.

The necessity for special liners in the containers has been eliminated. The coating used, is known as Gaylord #7, and is applied to the cylinder board at the paper mill before laminating and corrugating is done. Tests are now being made on several other applications of the grease resistant board.

Circle 225 on Reader Service Card for more information

### Reinforced Waterproof Papers

The Stocker Mfg. Co. has introduced "Champion" line and the "Utility" line of reinforced waterproof papers. It is claimed that because of a patented method of reinforcing with Fiberglas, a uniform sheet (a result of the exact pattern reinforcement) can be assured. The Champion line includes Glaspu Heavyweight No. 488, Glaspu Middleweight No. 465, Glaspu Creped Middleweight No. 466, Glaspu Scuf-Champ No. 467 and Glaspu Welterweight No. 443. The Utility line includes Glaspu No. 411 and Glaspu No. 422.

Circle 226 on Reader Service Card for more information

### Semi-Automatic Label Dispenser

For applications where pressure sensitive labels are used in moderate volume, Kleen-Stik Products, Inc. has introduced a semi-automatic dispenser. It is said to be convenient and economical for a few or thousands of applications a day. A

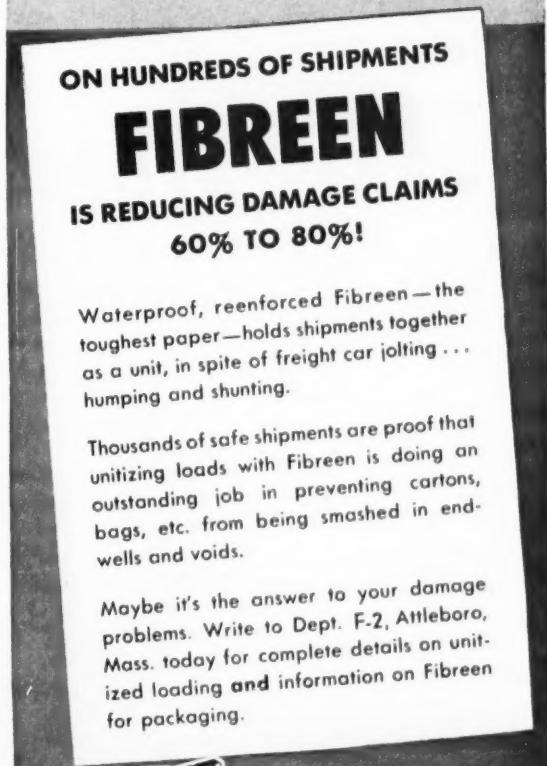
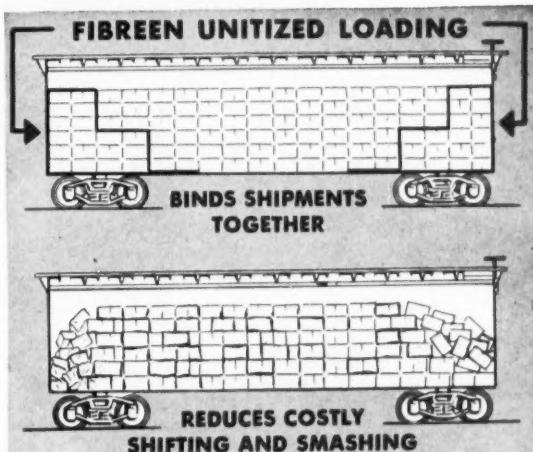


ready-to-apply label is presented every time the hand-operated lever is depressed. This single operation automatically measures off the label, separates

the label from the protective backing, feeds the labels at desired speed and presents each label ready to pick up and press in place. The dispenser handles all sizes and shapes of Kleen-Stik pressure-sensitive labels up to two inches wide with a lever pull of 2½ inches.

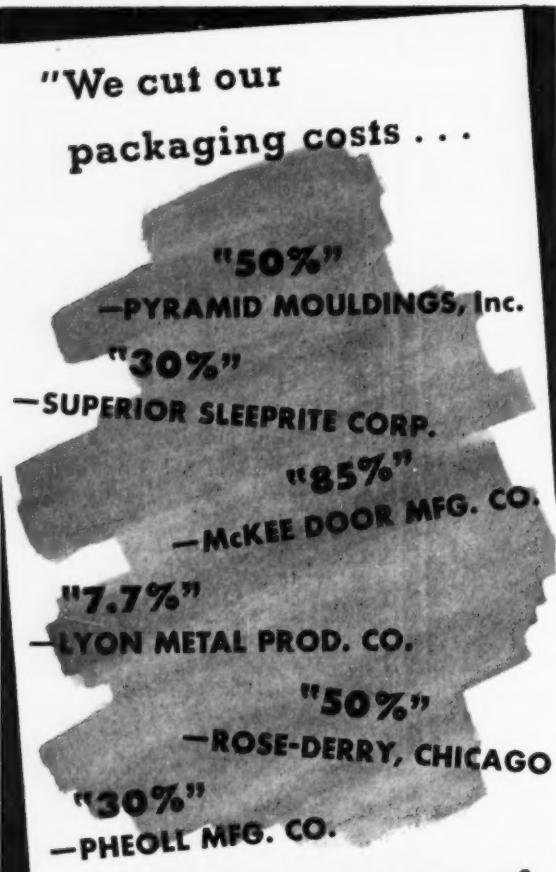
Circle 227 on Reader Service Card for more information

## STOP DAMAGE WITH THIS TOUGH, LOW-COST RETAINING PAPER



ATTLEBORO, MASS. • CHICAGO 8, ILL. • NEW YORK 17, N.Y. • SAN FRANCISCO 5, CALIF.

Circle No. 125 on Reader Service Card for more information



## with TAPE-STRAP® gummed filament tape"

Shippers of products ranging from nuts and bolts to mattresses, testify to the way Tape-Strap reinforcement cuts packaging costs.

If you now reinforce paperboard cartons with pressure-applied strapping, you probably can cut packaging costs and provide better protection with Tape-Strap. Or, you may be able to switch from more expensive containers to paperboard cartons, reinforced with short strips of super-strong Tape-Strap.



Changing to this neatly Tape-Strapped carton cut packaging costs 50% for Rose-Derry, Chicago.

Why not get the story of safer, easy-to-use Tape-Strap? Write for free sample roll and complete data.

LEADERS IN THEIR LINE

**MID-STATES Gummed Paper Company**  
2515 S. DAMEN AVE., CHICAGO 8, ILLINOIS  
New York • Boston • Philadelphia • Cleveland • Detroit • St. Louis • Atlanta • Los Angeles

Circle No. 96 on Reader Service Card for more information  
134

### Double-Wall Drum Liner

A new double wall drum liner with an insulating air space is said to reduce the possibility of rupture by distributing stresses more evenly over the entire surface. Made of polyethylene, the liner is designed for use with either fiber or steel drums. Protecting the surface of the drum, it can be used to transport acids, alkalis, foods or other "hard to handle" products. Called the "See-Safe" Multiwall Airliner, it is made by Mehl Mfg. Co., division Sydney-Thomas Corp.

Circle 228 on Reader Service Card for more information

### VCI Paper Drum

Special Products Co., Cargo Packers Inc., has announced full production on a new drum for dispensing VCI papers. The dispenser drum is claimed to effectively prevent deterioration in the quality of VCI papers, making it possible to use these papers in mass production. The drums are completely self contained storage units designed to maintain quality and maintain full effectiveness of VCI papers.

Circle 229 on Reader Service Card for more information

## Low-cost conveyor attachment marks cartons, cases automatically



Save man-hours now used for manual marking. Attach a ROLACODER Imprinter to conveyor or case-sealer and eliminate the cost of stenciling or rubber-stamping. Get neater, cleaner, more accurate marking, too. Friction-operated, self-inking. Copy changes made in minutes. Pays for itself in weeks.

Write for ROLACODER brochure showing models to imprint top, sides of every kind of package.

*Gottsch*

**ADOLPH GOTTSCHO, INC.**  
Hillside 5, N. J.



Circle No. 64 on Reader Service Card for more information  
FLOW • FEBRUARY, 1954

Circle No. 141 on Reader Service Card for more information

## MEN . . .

(Continued from page 22)

### . . . at Wayne University

Dr. Spencer A. Larsen, director of the Materials Management Center at the university, was unanimously re-elected to serve a second year.



Dr. Larsen



H. Palmer

as chairman of the College-Industry Committee on Material Handling Education. Howard M. Palmer, general sales manager of Lewis-Shepard Products Inc., and president of the Material Handling Institute during 1953, was elected vice-chairman. Irving M. Footlik was re-elected secretary.

### . . . at Magnesium Co. of America

William Johansen, general sales manager, has been elected

vice president in charge of sales, according to Miles L. Abel, executive vice president. Prior to being appointed general sales man-

ager two years ago, Johansen served as southwestern division manager. He has been with the company since March, 1948.

### . . . at Mercury Mfg. Co.

John E. Stevens has been appointed Advertising Manager effective January first. He formerly was affiliated with the technical publicity firm of Harry W. Smith, Inc.

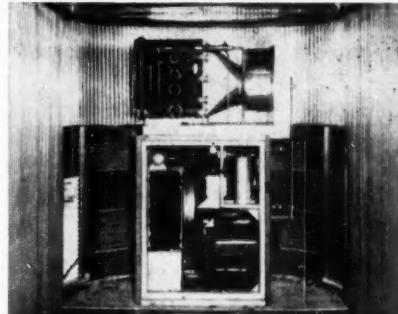
(Continued on next page)

## California to Nebraska... Temperatures Stay at 1° F.

## Refrigeration Unit is **WISCONSIN-Powered**

When frozen food must stay frozen on hauls extending halfway across the continent, that's when refrigeration power must be dependable . . . as typified by the installation illustrated here, made by Wilkinson Manufacturing Co., Omaha, Nebraska. Power is supplied by a V-type 4-cylinder Wisconsin Heavy-Duty Air-Cooled Engine which provides continuous, uniform power to meet every demand of the cooling unit as well as the problem of space-saving installation.

While transport refrigeration is only one phase of Wisconsin Air-Cooled Engine Service in the broad field of Material Handling, conveyors and other essential equipment requiring dependable power within a 3 to 36 hp. range. You can't do better than specify "Wisconsin" Engines for your equipment.



Note the convenient, compact installation of this Wisconsin-powered Wilkinson Cooling Unit.



Typical V-type 4-cylinder Wisconsin Air-Cooled Engine.

These engines perform equally valuable services in operating lift trucks, conveyors and other essential equipment requiring dependable power within a 3 to 36 hp. range. You can't do better than specify "Wisconsin" Engines for your equipment.



## WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

A 7748-1/2



### STANDARD NESTIER BOXES and BASKETS FOR SPECIAL JOBS

Nestiers are mass produced in three standard sizes. They nest to save space. Filled, they tier with contents of each unit visible and accessible.



We guarantee that replacement with Nestiers will reduce your handling costs regardless of whether you transport small parts by hand, pallet or conveyor.

NESTIER

WRITE NOW  
FOR DETAILS

THE CHAS. WM. DOEPKE MFG. CO., INC.  
ROSSMOYNE, OHIO

Circle No. 45 on Reader Service Card



for BLOCKS  
BRICKS • BAGS  
BOXES • BALES  
BUNDLES • BEER

Steel for  
LOW COST  
•  
Aluminum  
for LIGHT  
WEIGHT

## New London "BB12" CONVEYOR

12" Rough Top cleated belt elevates material up or down, forward or back; gas or electric power. Standard lengths 10' to 20'; others available.

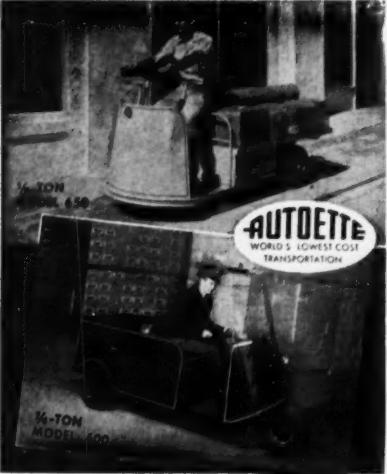
Also Conveyors for Bulk Materials.

SEND FOR CATALOG.

## NEW LONDON ENGINEERING CO.

TEL. 424 • DEPT. F • NEW LONDON, WIS.

Circle No. 101 on Reader Service Card



## 2 great new ELECTRIC AUTOETTE Pickup Trucks

Electric AUTOETTE Pickup Trucks are ideal for all types of light hauling in industrial plants... docks and warehouses... resort hotels... movie lots... golf courses... estates and ranches.

Both the  $\frac{1}{4}$ -ton and  $\frac{1}{2}$ -ton AUTOETTE Pickups are sturdy built to give years of dependable, trouble-free service. Because there's no engine or complicated parts, AUTOETTES are free from costly repairs and adjustments.

### Costs only 3¢ a day

AUTOETTE Pickup Trucks are famous for their amazing economy. Only 3 cents for electricity for 12 hours of daily hauling—30 miles of travel. Less than a dollar a month—\$10.00 a year— $1/5$  cent per ton-mile!

At the end of the day, just plug the Taper Charger into any electric outlet. The batteries are charged overnight—ready for another day of perfect service.

AUTOETTE Pickup Trucks sold by:

**AUTOETTE Sales & Service**  
Los Angeles, Calif.

Blood Enterprises, Inc.  
Long Beach, Calif.

Western Autoette Sales  
Salt Lake City, Utah

Rapid Sales Corporation  
Maywood, Ill.

Guelich & Boebel, Inc.  
Buffalo, N. Y.

B. F. Shearer Company  
Seattle, Wash.

Brayley & Graham  
Portland, Oregon

Wm. J. Trombley  
Dallas, Texas

For complete information and  
colorful AUTOETTE brochure,  
sign and return coupon below.

**AUTOETTE, Inc.** • Dept. 1312  
730 West Esther Street  
Long Beach, Calif.

Please send complete information about  
AUTOETTE Pickup Trucks

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_



Circle No. 10 on Reader Service Card

136

## MEN

Continued

### . . . at Baker-Raulang Co.

William A. Bauer was recently elected president and Charles N. Sumwalt, Jr. executive vice president. Bauer remains board chairman, and suc-



W. Bauer



C. Sumwalt

## ASSOCIATIONS . . .

(Continued from page 68)

proved to be even more successful than its 1952 counterpart. Approximately 125 persons participated in the seminar which was divided into six discussion groups. The president's reception dinner which highlighted the event was addressed by Dr. D. J. Wilson, of the Montreal Star, who spoke on "Some Human Materials That Need Handling." Such was the success of the seminar that it has been proclaimed an annual event.

• Word from Atlanta tells of a recent meeting of the Society of Industrial Packaging and Material Handling Engineers chapter there being visited by national managing director C. A. "Chuck" Carney. Chapter vice president E. R. Barrows also showed a film entitled, "Conveyors That Pay Dividends", obtained through the courtesy of the Lamson Corp.

ceeds as president James W. Moran, who retired January 1. Sumwalt was formerly V. P. of the company's eastern sales division, and remains a member of the board of both Baker-Raulang and its subsidiary, Baker-Lull Corporation.

*Pays for itself in  
Less than 100 days*



# FRIED Stripveyor

Patented

**makes sheet handling wholly mechanical**

Automatically picks up cut strips, conveys them beyond shear bed. Makes shear 100% efficient. Adjustable to any height up to 45"—synchronous to shear speed—handles any gauge sheet up to  $\frac{3}{8}$ ", widths as wide as allowable by standard 20" back gauge, lengths to size of shear. Portable! Caster-supported carriage supplied with floor locks.

**SHEAR TO .005**

# FRIED Liftveyor

Patented

Enables clean-cut wide shearing to .005" regardless of material. Eliminates flexing—supports sheet from underside while sheet edge is against back gauge—then conveys it beyond shear frame. For sheet or plate up to  $\frac{3}{8}$ " thick.

For complete strip handling convenience add FRIED Strip-Stacker to Liftveyor or Stripveyor. Write for full details today!

**FRIED** STEEL EQUIPMENT MFG. CORP.  
528 EAST 119th ST., NEW YORK 35, N. Y.

Circle No. 153 on Reader Service Card for more information

FLOW • FEBRUARY, 1954

Circle No. 147 on Reader Service Card for more information

• The Falls Cities chapter of the AMHS will welcome a prominent speaker to its February 25th meeting in Louisville, Ky. He is Robert W. Choate, material handling foreman for the Frigidaire Division of the General Motors Corp. in Dayton, Ohio. Choate's talk is entitled, "The Material Handling Engineer in Industry."

• In Cleveland on February 25th the AMHS chapter will enjoy a double-barreled field trip at two neighboring plants, Pesco Products Co. and Air Maze Corp. Tour leaders will be John Hawley and Cal Knowlton of Pesco Products, and Mr. Parker and Mr. Janson of Air Maze. Following the afternoon tour an evening dinner will be held at which time a discussion of material handling in both plants will take place.

## C-F LIFTERS

C-F Lifters give you the fastest, cheapest and safest way to handle loose or bundled sheet steel or plate. 1 man operation saves labor; infinite adjustments of Lifter jaws permit it to handle many widths of steel . . . wide carrying angles hold packs securely, won't damage even highest grade sheets. C-F Lifters are made in standard and semi-special models with capacities from 2 to 60 tons.



Write for Bulletin SL-28. It describes and illustrates C-F Lifters money and time saving advantages.

**CULLEN-FRIESTEDT CO.**  
1320 SOUTH KILBOURN AVENUE • CHICAGO 23, ILLINOIS



Increase Your Storage Capacity  
with a  
**SWING-SHIFT UNIT**  
HYDRAULIC FORK CONTROL ATTACHMENT  
ADDED TO YOUR LIFT TRUCK

Ask us how SWING-SHIFT:

- Speeds car and truck loading
- Turns corners in narrower aisles and tight spaces.
- Eliminates all non-productive maneuvering
- Handles more loads per day

UNITS AVAILABLE FROM 3,000  
TO 16,000 LB. CAPACITY

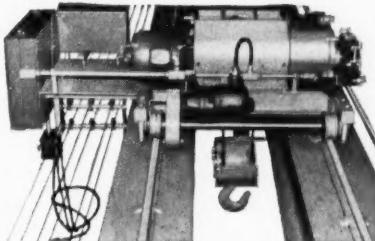
See Your Lift Truck Dealer or Write

**SWING-SHIFT MFG. CO.**

P. O. BOX 957  
LONGVIEW, WASHINGTON

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FLOW • FEBRUARY, 1954

## Investigate the Economy of a



For intermediate demands in material handling, Euclid Utility Cranes meet all requirements.

Here for example, is a 54 ft. span double-girder crane in which the hoist is a standard Euclid unit of long proven merit. Geared head motors of widely accepted high quality are used to propel the bridge and the hoist trolley. Control is by push-buttons from the floor.

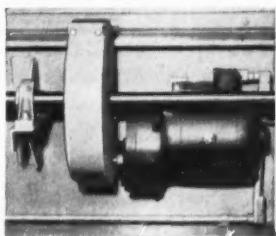
This construction provides a crane with a full safety factor of five that measures up to all demands in capacity, performance and serviceability; and also effects economies in first cost, in operation and maintenance.

Write us regarding your requirements.



**THE EUCLID CRANE & HOIST CO.**

1362 CHARDON ROAD • EUCLID, OHIO



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# What's NEW

## in useful FREE literature

These publications, written by experts, are FREE. Indicate your choice on the self-mailing Readers Service Card.

### Water Filters:

In response to requests from all branches of industry, Marvel Engineering Co. has adapted all models of its sump and line type filters for water applications. No changes have been made in the basic synclinal filter design, according to the manufacturer. Full particulars and descriptive data may be obtained upon request.

Circle 245 on Reader Service Card

### Portable Gantry Crane:

Literature describing three capacity models of its Trail Crane is available from the Noble Company. Built in 10, 25 and 60-ton sizes, the gantry is completely portable and can be erected in one hour or less. It is said to be independently powered and has its own built-in hydraulic system. Detailed specifications are included in the illustrated brochure.

Circle 246 on Reader Service Card

### Heavy-Duty Baler:

The American Baler Co. offers illustrated literature on its heavy-duty balers for waste paper and corrugated stock. Complete specifications are contained in the literature. Bales range from 500 to 1000 pounds, depending upon the type of scrap to be baled.

Circle 247 on Reader Service Card

### Versatile Crawler Tractor:

A 16-page profusely illustrated catalog pictures numerous applications for the Model OC-3 industrial crawler tractor manufactured by the Oliver Corp. Various attachments available are said to make the unit a tractor of a thousand uses.

Circle 248 on Reader Service Card

### Sheet Metal Feeding:

Fried Steel Equipment Co. presents the details of its Liftveyor for sheet metal feeding in an illustrated catalog supplement. The Liftveyor is said to successfully support sheets of any material to permit close tolerance shearing to the back-gauge, and also carries the sheared material to a point safely beyond the frame of the shear.

Circle 249 on Reader Service Card

### Facts About Cranes:

An informative booklet entitled "All Lifts Are Easier With a CraneMobile" has been prepared by Bay City Shovels Inc. and may be obtained upon request. The booklet describes the many features of the CraneMobile and its application to the many difficult lifting tasks that confront contractors today.

Circle 250 on Reader Service Card

### Metal Conveyor Track:

R. T. Sheehan Co. has available a data sheet giving the specifications and other general information about its line of metal mesh belt forging conveyors for heavy loads and excessive heat abuse.

Circle 251 on Reader Service Card

### Bucket Handling Equipment:

A colorful 58-page catalog may be requested from Continental Gin Co. covering its line of bucket elevators and replacement parts. Detailed specifications, graphs and charts are incorporated in the book making it a valuable addition to your technical library.

Circle 252 on Reader Service Card

### Continuous Level Indicator:

Measurement of liquids, granular solids, viscous fluids, powders and other similar materials can be accomplished with simple, low-cost and dependable equipment described in bulletins available from the Fielden Instrument Division of Robertshaw-Fulton Controls Co. Details of the electronic equipment are contained in bulletins F-103, F-101, F-151 and F-951.

Circle 253 on Reader Service Card

### Better Belt Joints:

Clipper Belt Lacer Co. has available illustrated literature telling how smoother joints can be obtained in leather, fabric or rubber-based belting. The bulletins show lacing equipment and supplies. Special purpose belt hooks also are described. They are available in rust-proof monel metal, stainless steel or phosphor non-sparking bronze.

Circle 254 on Reader Service Card

### Unit Stacking:

Reprints of an article entitled "Basic Ways of Unitizing" which appeared in the November, 1953, issue of FLOW are available from Signode Steel Strapping Co. Patterns and methods for safe palletizing or stacking of odd-shaped units are explained in detail.

Circle 255 on Reader Service Card

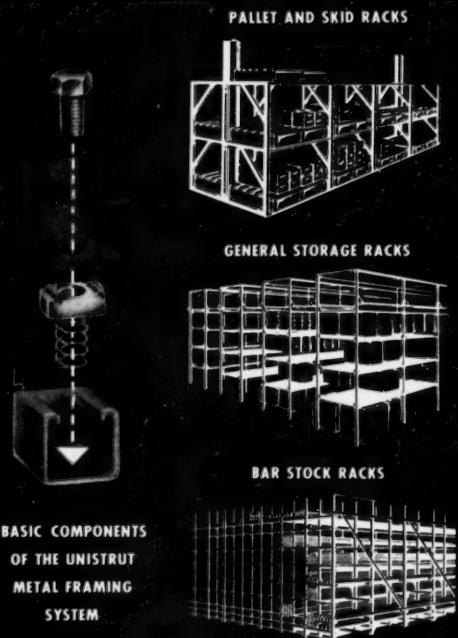
### Electric Car Pullers:

Catalog 100H-66 may be requested from American Hoist & Derrick Co. covering its line of winch equipment for installation on docks, piers, tractors and railroad terminals.

Circle 256 on Reader Service Card

**NOW! 15 BASIC  
UNISTRUT®  
RACK DESIGNS TO MEET  
ALL STORAGE NEEDS**

**Easy-to-adapt standardized designs will  
save time, money—do the job better!**



**BASIC COMPONENTS  
OF THE UNISTRUT  
METAL FRAMING  
SYSTEM.**

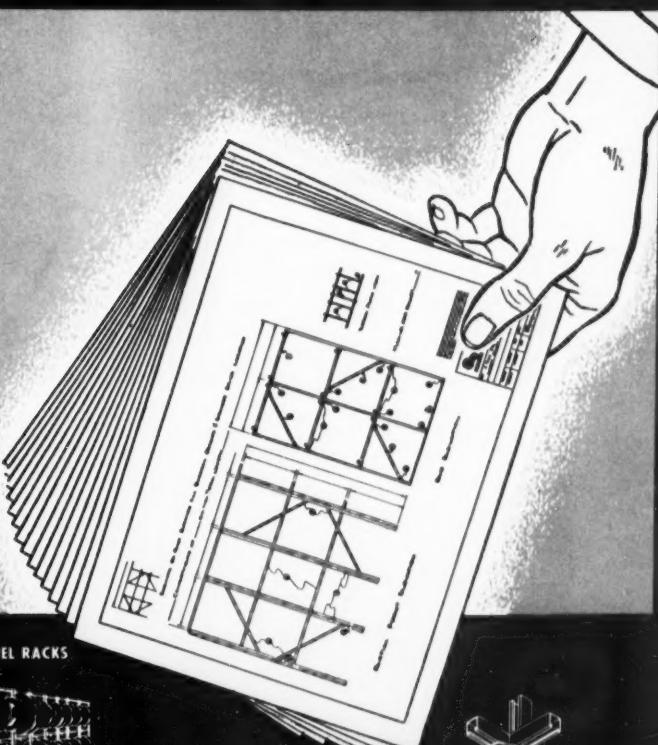
Users of UNISTRUT framing well know its versatility—how easily it is assembled, without special tools or skilled help, without drilling or welding. They know its great load bearing capacity, that it is adjustable and re-usable, that it presents a neat and orderly appearance. They know, too, of its long range economy, its labor saving, time cutting features.

Now UNISTRUT offers new advantages in the form of design standardization for racks of all types, permitting easy adaptation of a variety of proved, field-tested designs to your own special needs. If you have a rack problem you will want to see how these designs can save you engineering detailing and erection time, cut your costs, do the job better! Phone or write your nearest UNISTRUT distributor or dealer—he will gladly help you without obligation.

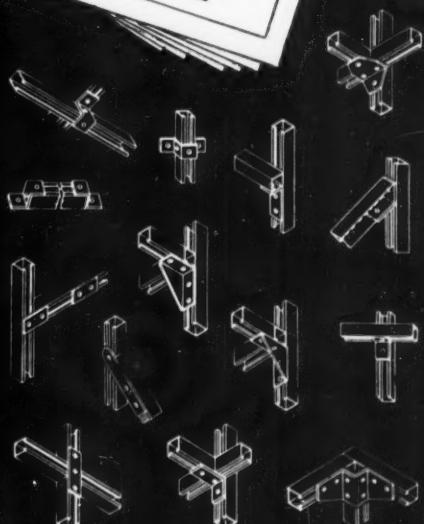
**Distributors and Warehouse Stocks in Principal Cities.  
Consult your Telephone Directories.**

U. S. Patent 2327587 2363382 2405631  
Numbers 2329815 2380379 2541908  
2345660 Other Patents Pending

The World's Most Flexible  
All-Purpose Metal Framing

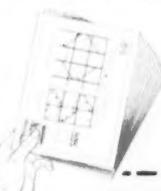


**No Drilling,  
No Welding,  
100% Adjustable  
and Re-usable.**



Typical Connections made from  
a Few Standard Fittings

**FREE!** 15 Standardized Rack Designs.  
Light and heavy duty, multiple tier, single  
and double entry pallet, bar stock,  
reel and storage racks—contact your near-  
est UNISTRUT repre-  
sentative, or mail  
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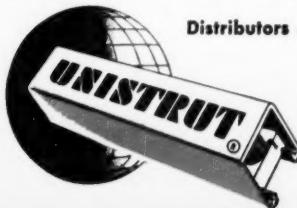
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1013 W. Washington Blvd., Chicago 7, Ill. Dept. A2  
Please send me the Standardized Rack Designs,  
without obligation.

Name \_\_\_\_\_

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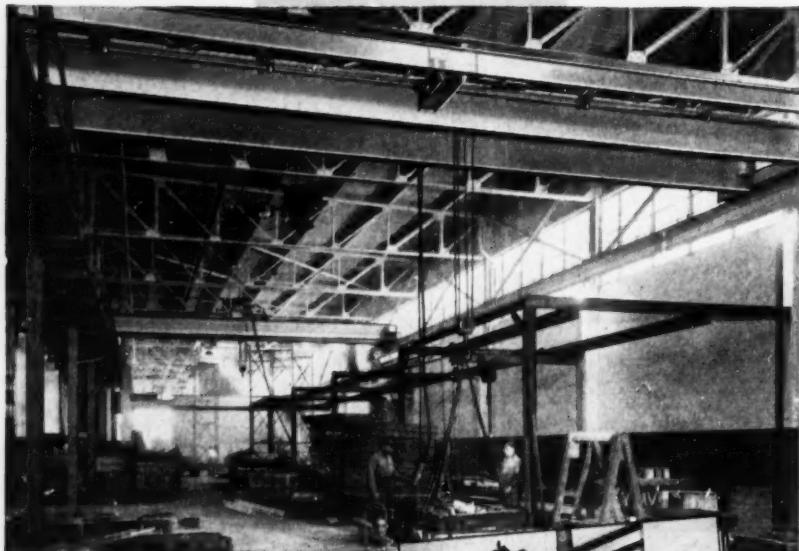
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**When considering Industrial Cranes  
in Capacities up to 15 Tons . . . Be  
Sure You Have the Facts About . . .**

# CRANEMASTER

**TOP QUALITY . . . LOW COST!**



No other overhead cranes of comparable quality are more conservatively priced or more dependable in operation. This explains why the Cranemaster is used in so many plants to STREAMLINE PRODUCTION and PARE DOWN COSTS . . . also why so many firms specify Abell-Howe Cranes again and again. Some are using 5, 10, even 20 and more of these service-proven units—because they have found them economical to buy . . . to operate . . . to maintain.

We invite you to make a check and comparison of our specifications and quotation to find just how much your crane dollar actually can buy at . . .



Ask for a copy  
of our NEW  
Cranemaster  
Catalog No. C120



53 West Jackson Blvd.  
CHICAGO 4, ILLINOIS

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140

### Library Addition:

A worthwhile addition to your technical library is the No. 3 booklet of the Library of Know-How published by the Material Handling Institute. In it is explained the relationship between material handling and other industrial functions such as plant layout, inspection, product design, processing and others.

Circle 257 on Reader Service Card

### Moldable Plastic:

Descriptive literature telling about Boltaron, the formable plastic sheet, may be requested from Bolta Co. The material is manufactured from a plastic copolymer and a synthetic rubber. The combined advantages of the elasticity of rubber and the rigidity of the plastic is said to result in Boltaron's remarkable toughness and high impact strength. Its adaptability to formation when heated, and resistance to water, chemicals, acids and abrasives allows an almost unlimited scope of application.

Circle 258 on Reader Service Card

### Portable 2-Way Radio:

An illustrated catalog folder No. C.302 may be requested from the Engineering Products Department of the RCA Victor Division describing the Carfone Station "15" portable two-way radio station unit. Both transmitter and receiver are contained in the one unit and can be used either as a fixed station or for portable operation. It is said to meet all FCC requirements and requires little or no installation expense.

Circle 259 on Reader Service Card

### Industrial Batteries:

Complete specifications and description of features are available from the C & D Batteries Inc. covering its line of industrial batteries. A feature called "Slyver-Clad" is maintained to give added power from the same battery space, thereby providing full workday service.

Circle 260 on Reader Service Card

# The Most Important Safety Development in Exhaust Fume Control . . . Death to Carbon Monoxide and Hydrocarbons

## The OCM Catalytic Exhaust A Houdry Catalyst Development

A death sentence for two killers — a proven answer to one of industry's most critical problems — that's what the OCM Catalytic Exhaust means to you today.

You know the deadly risk of carbon monoxide wherever gasoline-powered equipment is used indoors. The hydrocarbons in exhaust fumes are even more dangerous. Now, with the OCM Exhaust, both these threats to life and health can be easily, economically ended.

Now, with the OCM Exhaust, you can operate lift trucks, tow trucks, loaders, auxiliary generators — *any type of machinery run by an engine burning non-leaded gasoline* in even the most closely confined areas — continuously, efficiently, safely. And *without the cost of extensive ventilation systems*.

The OCM Catalytic Exhaust eliminates 95% or more of the carbon monoxide — 99% of the hydrocarbons — from any engine in which you use non-leaded gasoline. Connected to the engine exhaust manifold, strong, compact catalytic units "burn out" harmful, foul-smelling fumes and odors before they reach the air you breathe.

Think of the significance. The ex-



(1) Connection to engine exhaust manifold. Cubic inch displacement of engine determines number of catalytic units needed. Almost any size engine can be equipped. Tested and listed by Underwriters Laboratories, OCM is strong—rupture-proof under explosion. • (2) Venturi or air inlet connected directly to exhaust manifold flange. Introduces fresh air into exhaust gas stream to provide necessary oxygen. • (3) Fresh air filter prevents contamination—keeps foreign matter from entering exhaust system. • (4) Catalytic units here eliminate carbon monoxide, hydrocarbons, fumes and odors. Units give 2000-2500 hours of trouble-free service—can then be quickly, economically replaced. OCM Exhaust imposes no more back pressure than standard muffler—often less. A thermocouple connected with pyrometer on instrument panel keeps constant check on catalyst efficiency. Non-leaded gasoline must be used.

haust fume problem is great and growing. Now, with the OCM Exhaust, you can have cleaner, safer air inside your plant. For your employees this means an end to fume-caused headaches, eye irritation and nausea — perhaps serious undermining of health. For you it means all the advantages of higher employee productivity and morale.

### Easily Installed By Your Own Mechanics

The OCM Catalytic Exhaust is designed to replace the standard gasoline engine muffler. It is available as original equipment from leading concerns such as *Clark Equipment Co.* — or can be fitted right on your present gasoline engines. Your own mechanics can install it quickly, easily, without changing clearances.

The OCM Catalytic Exhaust is today a proven success — used by many of the country's biggest industries.\* Developed by the noted inventor, Eugene Houdry, who discovered the catalytic cracking process and who

has given half a lifetime to catalytic research, the OCM is the most important safety development in exhaust fume control ever produced. Wherever you operate gasoline-powered equipment indoors — even part time — you have a real, a critical, need for the OCM Catalytic Exhaust. Write now for complete technical information and name of nearest supplier.

\*Names of users on request

### OXY-CATALYST, Inc. WAYNE, PA.

Send in the coupon below for new illustrated folder on the OCM Catalytic Exhaust, and complete technical information.



OCY-CATALYST, Inc., Wayne, Pa.

Send me complete technical information on the OCM Catalytic Exhaust and name of nearest supplier.

Name \_\_\_\_\_

Firm Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**NOTE.** This company makes catalysts for air pollution control and waste heat recovery in drying ovens, incinerators, oil refineries, and many other industrial operations. Write for details.

Circle No. 107 on Reader Service Card for more information

Circle No. 118 on Reader Service Card

# ELTON CONVEYORS



## HAVE PROVED THEMSELVES IN OVER 1500 INSTALLATIONS

Advanced features, such as, power lift mean higher capacity at lower cost.

**Write for Our Catalog.**  
It contains information on portable conveyors up to 35 feet. Light duty conveyors, stationary and intra-floor units in various belt widths and lengths.

**Dealer Inquiries Invited. Sell this popular line.**

**CHANTLAND MFG. CO.  
BADGER, IOWA U.S.A.**

## Traffic Lanes Effective:

The percentage of personnel who will adhere to established traffic lanes, parking lines; and other pertinent questions are answered in a new information folder available from the H. C. Sweet Co. How traffic is better organized and vital parking space is conserved is brought out in the folder which describes the company's Florline Marking Machine for applying painted stripes.

**Write 261 on Reader Service Card**

## Loader Conveyors:

An illustrated catalog from the New London Engineering Co. is available providing complete specifications and photographs of typical applications for light loaders, hopper conveyors, under car unloaders and other types of bulk material conveyors for handling coal, sand, gravel and similar materials.

**Write 263 on Reader Service Card**

## Automatic Elevator:

Catalog No. 300 from Prab Conveyors, Inc., contains the outstanding features and typical uses of the Magnavator, an automatic elevator for lifting small parts. In operation, one or more permanent magnets are mounted in a non-magnetic container.

**Write 264 on Reader Service Card**

## Electric Metal Detector:

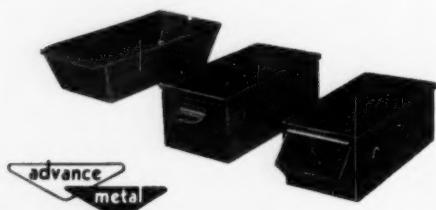
Details of an electronic metal detector are explained in a catalog folder No. E .42 available from the Engineering Products Department of RCA Victor Division. The detector is sensitive to any kind of metal or alloy, magnetic or non-magnetic, including manganese steel, copper, aluminum, stainless steel or brass. It can be used effectively over bulk material conveyors to permit separation of foreign metals.

**Write 262 on Reader Service Card**

## Industry Ideas:

"Industry Ideas", a publication developed in the interest of business and industrial improvement, is available from the consulting en-

## FOR Streamlined MATERIAL HANDLING



## STACKING BOXES and NESTING PANS

Ideal for handling and storing medium loads. Particularly rigid when stacked because inside supporting rails extend around all four sides. Of heavy-gauge steel, three piece construction with reinforced corners, these boxes are made to stand up under heavy strain.

STANDARD AND SPECIAL SIZES

Representatives from Coast to Coast

WRITE TODAY for Information

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**metal**

PRODUCTS CORP.

1724 S. NORMAL AVE. • CHICAGO, 16, ILL.

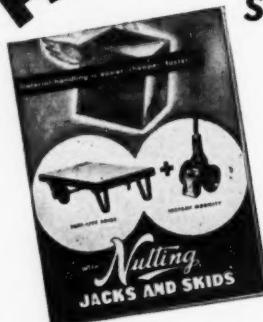
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142

# FREE BULLETIN

## Shows how to

- ★ Save time
- ★ Save floor space
- ★ Reduce handling costs

WITH



## NUTTING JACKS and SKIDS

On-the-job photos in Bulletin 48-JS demonstrate the many advantages of the Nutting Jack and Skid System. It is easy and inexpensive to install—and is so flexible to varying plant layouts that there is scarcely a materials handling problem to which it cannot be profitably applied.

Representatives in principal cities—Look under "Trucks" or "Casters" in classified phone directory—  
Or SEND NOW FOR BULLETIN 48-JS



SINCE  
1891 **Nutting** TRUCK AND CASTER CO.

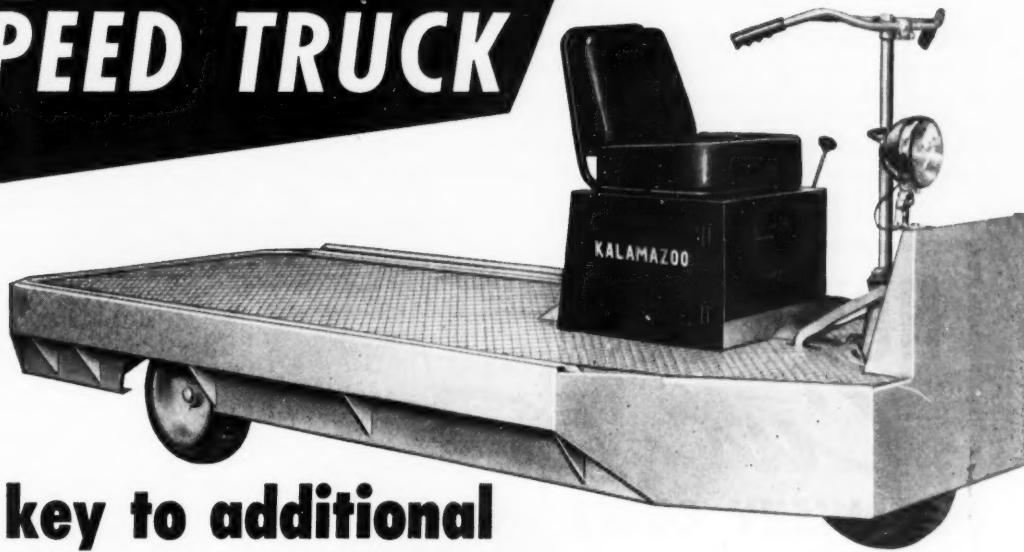
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Export Sales: School International, Inc., 4237 North Lincoln Ave., Chicago 18, Ill.  
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FLOW • FEBRUARY, 1954

# KALAMAZOO

MODEL 2500

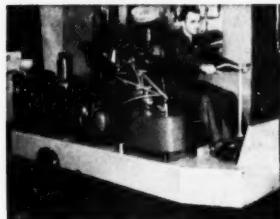
# SPEED TRUCK



**...key to additional savings in your plant**

Equip *Kalamazoo* Model 2500 Speed Truck as a fire truck, lubrication truck, personnel carrier or maintenance truck and save valuable time, often vital minutes, in your plant. *Kalamazoo* Model 2500 (shown above) has a deck 48 inches wide and 78 inches long back of the seat. Gasoline powered, the *Kalamazoo* has 15 m.p.h. travel

speed and maneuvers easily through standard doors and narrow aisles. Rugged throughout, the *Kalamazoo* Speed Truck is synonymous with day-in day-out dependability. It will pay you to investigate the versatile *Kalamazoo* for your plant operations.



AS A LUBRICATION TRUCK, *Kalamazoo* Model 2500 Speed Truck saves time in keeping machine tools and other equipment properly lubricated.



AS A PERSONNEL CARRIER, *Kalamazoo* Model 2500 Speed Truck is ideal for plant tours by personnel or visitors.



AS A MAINTENANCE TRUCK, *Kalamazoo* Model 2500 Speed Truck speeds movement of maintenance crews and equipment.



SERVICING OF VENDING MACHINES throughout the plant is accomplished speedily and efficiently with the *Kalamazoo* Model 2500 Speed Truck.

Send for Bulletin ST-4.



MANUFACTURING SINCE 1883

**KALAMAZOO MANUFACTURING COMPANY**

KALAMAZOO, MICH., U.S.A.

Circle No. 152 on Reader Service Card for more information

FLOW • FEBRUARY, 1954

143

gineering firm of Wheeler Associates, Inc. The booklet is designed to give valuable ideas to executives and operating men in business and industry.

Write 265 on Reader Service Card

### Conveying By Vacuum:

Bulletins 55 and 56 are available from Vacu-Blast Co. presenting complete information on its equipment for conveying bulk materials by vacuum suction pumps

and flexible conveyor hose. Equipment is said to be completely portable. All dust and powder is confined within the machine thereby preventing air pollution.

Write 266 on Reader Service Card

### Hydraulic Equipment:

A catalog covering a complete line of oil hydraulic equipment for mobile applications has been published by Vickers Incorporated. Catalog M-5101 provides specifications and engineering informa-

tion on hydraulic vane type pumps and motors, valves, power steering pumps and steering boosters, and other oil hydraulic units.

Write 267 on Reader Service Card

### Brakemotors:

Latest design specifications on Star-Kimble brakemotors are given in Bulletin B-501-A, an 8-page catalog issued by Star-Kimble Motor Division of Miehle Printing Press and Manufacturing Company. Motor ratings are from  $\frac{1}{2}$  to 100 hp, and brakes are designed for extremely rapid stopping and positive holding.

Write 268 on Reader Service Card

### Flexible Shafting:

An engineering bulletin No. 525 issued by Stow Manufacturing Company gives complete information for selecting the correct size flexible shaft for conveyor or any power drive application. The 12-page bulletin is well illustrated and contains many valuable charts and tables.

Write 269 on Reader Service Card

### Overhead Traveling Cranes:

Craneveyor Corporation has prepared a 12-page bulletin describing and illustrating some of the typical overhead traveling cranes designed, manufactured and installed by this company. Some electrical equipment and crane parts and accessories also are included.

Write 270 on Reader Service Card

### "Multi-Capacity" Fork Truck:

Edward S. Marion Companies have prepared a 16-page bulletin on what they call a "multi-capacity" fork truck. According to the manufacturer, this truck is designed to give maximum economy both in the cost of handling and the cost of storing packaged materials.

Write 271 on Reader Service Card

### Lift Gates:

Literature from Anthony Company describes the company's hy-

**NOW! 4 MORE WAYS TO Cut DELIVERY COSTS**

Does All Operations—OPEN, CLOSE—LIFT, LOWER with only ONE CYLINDER

A powerful freight elevator on the back of your truck that lifts or lowers Any kind of load Faster in perfect safety to operator and merchandise. Now Anthony Lift Gates do All operations faster by eliminating extra time-consuming operations. Uses only ONE cylinder and ONE control lever.

New Brochure shows HOW you can cut your trucking costs up to 50%. Send for your copy today—no obligation.

**ANTHONY COMPANY**  
STREATOR, ILL. • DEPT. 15E

Pat'd. & Pats. Pend.  
U.S. and Foreign

**REIN**

**ANTHONY THE WAY TO MAKE TIME PAY LIFT GATES**

Circle No. 162 on Reader Service Card for more information

# Ready Now! THE ALL NEW 1954-1955 **FLOW DIRECTORY** of MATERIAL HANDLING EQUIPMENT



Right Up To The Minute —  
The new FLOW Directory is  
your own library of autho-  
rative information about  
material handling equipment  
and accessories.

Whether your com-  
pany manufactures  
tanks or paper clips,  
FLOW DIRECTORY  
listings will lead you to  
purchase the "right"  
equipment to do your job.

Thorough Product Classification tells you  
who makes every known piece of M. H.  
equipment as well as who sells it . . .  
Identifies it by Trade Mark . . . Provides  
complete engineering and technical data with hun-  
dreds of charts and graphs . . . Includes manufac-  
turers' catalogs showing all types of equipment for  
every handling task.

## ORDER YOUR COPY TODAY . . .

You will see why the FLOW DIRECTORY is known as industry's "most thumbed" source of information about material handling, packaging and shipping equipment and machinery. Regardless of what ques-  
tions may come up concerning a piece of equipment, its manufac-  
turers, trade names, or where it can be purchased—you'll find the  
answers in the FLOW DIRECTORY.

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### FLOW DIRECTORY

1240 Ontario St. • Cleveland 13, Ohio

draulic lift gates. Specifications for the various models are listed, as well as drawings and in-use photos.

**Write 272 on Reader Service Card**

#### All-Purpose Conveyor:

Bulletin 253 from The Fairfield Engineering Company details the firm's all-steel, all-purpose portable conveyor for builders and contractors. The conveyor is especially suited for carrying materials from ground to roof, and can

handle many types of materials. Specifications and in-use photos are included.

**Write 273 on Reader Service Card**

#### Safety Wheel Chock:

A 4-page circular published by Calumet Steel Castings Corp. describes the Casteel safety retractable wheel chock. The chock holds trucks or trailers securely against docks, preventing them from moving forward when loading with heavy fork trucks or other equipment.

The retractive feature permits easy removal of the chock. **Write 274 on Reader Service Card**

#### Case Studies:

Case studies in modern lifting are available in booklet form from Globe Hoist Company. Included are time-saving, cost-cutting methods of lifting, loading and material handling for a number of varied industries.

**Write 275 on Reader Service Card**

#### Self-Adjusting Dockboards:

Self-adjusting dockboards made by Dockboards, Inc., are described and illustrated in a 4-page bulletin. The illustrations show how the ramp is brought into position without hydraulic or electrical power as the truck backs to the dock. Complete specifications are included.

**Write 276 on Reader Service Card**

#### Weighing Equipment:

How to weigh the contents of tanks, bins and hoppers electronically with Baldwin SR-4 load cells is explained in Bulletin 4106, issued by Baldwin-Lima-Hamilton Corporation. The 8-page bulletin covers installation design considerations, such as mountings, temperature effects and vibrations; indicating and recording instruments; weighing accuracy; and Baldwin-Lima-Hamilton's engineering services.

**Write 277 on Reader Service Card**

#### Case History Folders:

Two case history folders telling how leading companies are using industrial trucks to great advantage are available from Lewis-Shepard Products, Inc. The folders deal with handling problems in the chemical and electrical equipment industries.

**Write 278 on Reader Service Card**

#### Remotely-Controlled Trucks:

The practical applications and advantages of radio remote control for electric industrial trucks and tractors are illustrated by a number of operating views in Bulletin 534 from Barrett-Cravens Company.

**Write 279 on Reader Service Card**

## KOHLER ENGINES

4-CYCLE  
AIR-COOLED



K160

K90	3.6 H.P.
K160	6.6 H.P.
K330	12.0 H.P.
K660	26.8 H.P.

Kohler Engines are engineered and manufactured to the high standards which have made the Kohler mark known for quality the world over.

Power for garden tractors, pumps, sprayers, snow removal equipment, grain elevators, hoists, portable saws, concrete mixers, compressors, industrial lift trucks.

**Write for information**



K90



K330



K660

Kohler Co., Kohler, Wisconsin  
Established 1873

## KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS  
AIR-COOLED ENGINES • PRECISION CONTROLS

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Circle No 78 on Reader Service Card for more information

### Belt Conveyor Idlers:

More than 500 belt conveyor idlers in 34 types are pictured and described in a 48-page book, No. 2416, released by Link-Belt Company. Detailed information is provided for selection and spacing, based on weight and lump size of material to be conveyed. Schematic drawings and dimensional data are included for each type of idler.

Write 280 on Reader Service Card

### Tractor Loader:

Tractomotive Corporation offers literature describing its TL-10 Tracto-Loader. Features of the loader are pointed out, including a hydraulic torque converter drive and specially-designed clutch-type transmission.

Write 281 on Reader Service Card

### Cost-Saving Conveyor:

A 4-page reprint of a technical article, offered by Gifford-Wood Co., tells how a multi-story plant saves \$25,000 a year by installing a six-story vertical conveyor.

Write 282 on Reader Service Card

# MOVE materials

# best



- PERMANENT CONVEYORS
- PORTABLE CONVEYORS
- BUCKET LOADERS

see your B-G distributor  
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**Barber-Greene**  
AURORA, ILLINOIS, U.S.A.

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**FLOW** • FEBRUARY, 1954

## BULK MATERIALS STORAGE?

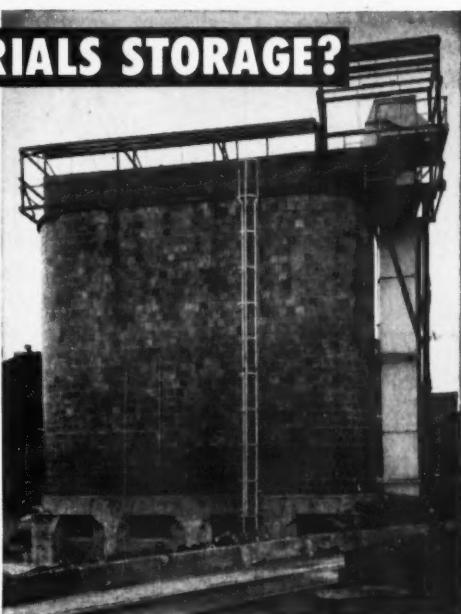
...here's the answer  
to your problems...

### Kalamazoo GLAZED TILE INDUSTRIAL STORAGE BINS

Any shape or size engineered to meet your requirements . . . heavy, monolithic construction . . . smooth-surfaced . . . weatherproof, fire-proof, corrosion-proof . . . contents protected against freezing, condensation, spoilage, contamination . . . appearance that ties in with modern industrial buildings . . . long-lived.

Send for complete  
details...

INDUSTRIAL STORAGE BIN DIVISION



Sand handling installation at large Ohio foundry.  
Kalamazoo design and construction provides more useable space than ordinary multiple bins.

**Kalamazoo TANK and SILO COMPANY**

231 Harrison Street

Kalamazoo, Michigan



## Sales Doubled on MILWAUKEE Trucks ...but Lower Prices are Only ONE of the Reasons

Here are Some of the others:—

● Users were quick to recognize the extra utility provided by recent additions to this growing line of medium duty, all-steel welded trucks.

● The MILWAUKEE Line is meeting the growing demand for light weight and easy maneuverability in ruggedly constructed tubular steel hand trucks and all-steel-deck platform trucks.

● The Milwaukee Line consists of 14 well designed, moderately priced models, including appliance carriers and Welding Trucks.

● Milwaukee Hand Trucks offer a choice of 3 handle types, open and closed nose plates and various types and sizes of wheel equipment to meet specific materials handling requirements.

### Write For Latest Literature

Learn why MILWAUKEE is the fastest growing line of Hand and Platform Trucks for factories, offices, stockrooms, warehouses, shipping rooms. Compare dollar-for-dollar values and you'll agree that Milwaukee offers you more.

Use the Convenient Coupon, or Write us on your business letter-head for Catalog M 123, Prices and Name of nearest distributor.

Distributors in Principal Cities

**MILWAUKEE**  
Truck and Caster Corp.

Gentlemen: Please send your Catalog M 123,  
prices and name of nearest distributor.

Name.....

Address.....

P. O. ....

State.....

6514 W. River Parkway, Milwaukee 13, Wisconsin

Circle No. 151 on Reader Service Card for more information

## ENGINEERED WAREHOUSING . . .

(Continued from page 91)

the mathematical progression composed of bay dimensions and other fixed points (walls, columns, docks, etc.). In this manner the trial and error approach could be made frequently and accurately. The results were as accurate as the basic dimensions, and detailed layout location data could be obtained directly from the table of

mathematical progressions. (An example of the mathematical layout approach used on this building is in the accompanying box.) The layout was completed by assigning appropriate areas to the paper converting shop, packing, dock loading and service and parking facilities for the powered handling equipment.

### Layout Helps Develop Handling

The handling and order picking system was, of course, partially

developed during the layout. Fork truck capacity and lift height were determined from pallet load weights and pallet rack height. To utilize the space above shelves and reduce aisle requirements, straddle trucks were chosen for use in the shelving areas where pallet movement was less frequent.

The tug-trailer system was selected as the order picking tool for reasons of flexibility, adaptability and cost. Since each operator knows the entire stock, the tug system has operating costs that are in direct proportion to the work load. The tugs also provide breakdown insurance by being a number of independently operating units. One other plus feature of the tug-trailer system is the ability to handle special or rush orders in a manner that does not disrupt the system.

Additional features provided to complete the handling system were: lightweight dock boards, powerized skid and pallet trucks, automatic hitches on all trailers, a powered floor sweeper, painted lines on the floor to designate individual pallet spots, standardization of equipment, and floor protection provided by rubber or fiber wheels on all rolling equipment.

Equipment needs were determined from a study of the rate of turnover, daily receipts, and distances to be traveled. In arriving at the number of tugs and trailers required, the "average order" was used to indicate time per order and therefore orders per tug per day.

When quantity, design criteria and specification data had been developed for all rolling equipment, shelving and racks, bids were accepted and the selections purchased. The equipment purchased was:

- 2—2000 lb. rider fork trucks
- 2—3000 lb. rider straddle trucks
- 4—700 lb. draw bar pull tugs (walk or ride)

1—4000 lb. skid truck (walk or ride)

1—4000 lb. powered pallet truck (walkie)

2—4000 lb. pallet lift truck (hand-hydraulic)

1—36 inch powered floor sweeper

75—3000 lb. 36 x 60 inch trail-

**TURNABOUT<sup>®</sup>**  
ADJUST-A-FORK  
**HYDRAULIC LIFT TRUCK**  
with interchangeable forks

As low as  
**\$350**  
for complete  
truck

capacity  
2500 lb.

At last, improved design and mass production techniques give you a quality product, properly priced. The Turnabout will immediately prove its superior performance with extra strength where needed most . . . high maneuverability . . . ease of operation. Resinoid type casters and aluminum leader wheels at no extra cost.

**INTERCHANGEABLE FORKS:** Easily interchangeable forks are available in five standard lengths. They may also be adjusted on the truck frame to provide 25" or 27" width.

**UNCONDITIONALLY GUARANTEED:** The Rack Turnabout is unconditionally guaranteed against defects in workmanship or materials for one year.

#### TRUCK COMPLETE

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| • With either 30", 36", 40", 42", or 48" forks..... | \$350 |
| • With either 54" or 60" forks.....                 | \$390 |

**RACK HYDRAULIC EQUIPMENT  
CORPORATION**

CONNELLSVILLE, PENNSYLVANIA  
AGENTS IN PRINCIPAL CITIES UNITED STATES, CANADA, EUROPE

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ers, necessary batteries, charging equipment and spare parts.

For storage facilities the equipment purchases were:

4300—40 x 48 inch wing type, non-reversible pallets

2600 lineal feet of pallet racks, accommodating 1600 pallets

4000 lineal feet of shelving

The new building provides an increase of 13 percent in total area—104,000 square feet as against 92,000 square feet. Actual square footage assigned to merchandise storage was increased only slightly; the majority of the 12,000 additional square footage is utilized by larger offices and various service areas, such as the Converting Department, lunch room, shipping dock, truck wells, etc. A substantial increase in actual storage capacity resulted from higher ceilings and the one-story operation—with large bays eliminating many interfering supporting columns—and elimination of shafts and stairways.

#### Phase 3—The Physical Move

With a completely equipped new warehouse ready for occupancy, the question was: "What is the best way to get the stock out of the old building and into the new in a reasonable length of time, put away in proper location, without serious interference with day-to-day operations and without excessive expense?"

The problem is not new or unique, but it is a big job and if not carefully planned can easily bog down. The method used was straightforward and effective. Basically, it was pre-determination of space assignment, in which each item was allocated to a given shelf or pallet slot and recorded in a tubular form by manufacturer's brand name and code number.

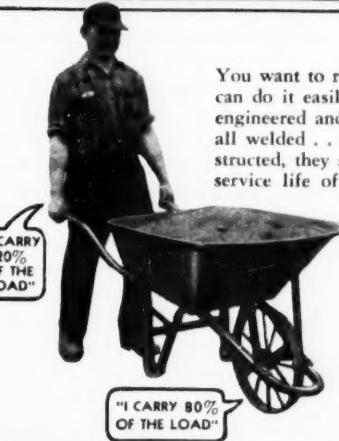
By making this space assignment ahead of time, three major advantages were realized:

(1) The knowledge that, before any stock was moved, a space for each item was assigned served as a check on space requirements, and most of the reshuffling of stock was accomplished on paper before the move.

(2) A recorded location of each and every one of 12,000 stock items eliminated the searching and hunting that would have been re-

*Any Way You Figure It...*

## STERLING COST LESS PER YEAR



You want to reduce your material transport costs? You can do it easily with Sterling Wheelbarrows. They are engineered and built for the tough jobs. All steel . . . all welded . . . no rivets . . . barrows so ruggedly constructed, they seem to last forever. The unusually long service life of Sterling Wheelbarrows protects your initial investment. And maintenance costs are almost nil. Compared to other barrows, Sterlings actually cost less per year. Get the facts. Write for catalog.

#### IMMEDIATE SHIPMENT

DEALERS: Ask about our liberal dealer selling plan.

*Costs Less per Year*

Look for this Mark of STERLING Quality

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

# Sterling WHEELBARROWS



#### It's the Revolator® Portable Uplifter Elevator

Adaptable for shop use or warehouse handling and ideal for shipping and receiving—the new electric Uplifter is the real buy today in materials handling. In two capacities, 1000 - 2000 pounds, platform sizes 24 x 24 and 30 x 30, lifts of 62 and 65 inches on standard models—the Revolator Uplifter can be had powered by a variety of electric circuits ranging from an automobile battery to 220 volt currents.

Priced under all competition, the Uplifter includes all the safety and convenience features that have made Revolator portable elevators a standard in industry. Get full information today on this new, easy operating inexpensive portable elevator. Remember, too—we build Revolator Portable elevators to your particular needs.

Write or phone

### REVOLATOR CO.

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## RAZORBACK Means QUALITY PALLETS

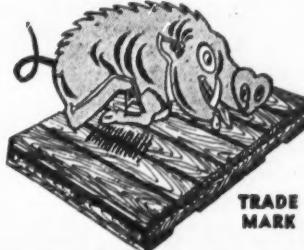
RAZORBACK Pallets save time and money in fewer repairs and lower maintenance cost.

RAZORBACK Pallets are built up to a standard, not down to a price! Available in nailed or bolted designs, heavy or light weight. Write us for details.

**Arkansas Pallet Co.**

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...with  
**ALBION'S**  
new  
*Safety Series*

Albion's new "Safety Series" Casters are the ultimate in safety, convenience and economy. Two completely new caster safety devices . . . the fool-proof Swivel-Lock and the toe-operated Wheel-Brake types can be furnished on practically all Albion light, medium and heavy-duty casters. Simple—yet rugged and easy-to-use, loads can now be more safely and easily secured without effort or "wheel blocking".

These new Swivel-Lock and Wheel-Brake equipped casters maintain the same high quality features built into every Albion industrial caster. Investigate the "Safety Series" as an added plant and personnel safety feature in your plant.



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**ALBION**  
**INDUSTRIES, INC.**  
ALBION, MICHIGAN

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150

## ENGINEERED WAREHOUSING

*Continued*

quired until the order fillers learned new stock locations.

(3) As a result of complete planning for the operation, the move went smoothly and efficiently.

It is interesting to note that, during the period of the move, the firm enjoyed an increase in volume of business yet was able to maintain its normal service and delivery schedules. The move was handled primarily at night and on week ends by the company's regular warehouse and delivery force. This was believed to be the preferable and more economical means—in spite of the overtime required—because it meant the merchandise was handled by an experienced crew, those familiar with the storage and handling methods peculiar to the product. And the necessary handling equipment and trucks were available then.

The problem faced by Carpenter

at Fort Worth was not a case of improvement for the sake of operational cost alone. It was also a problem of serving a market that simply could not be adequately and efficiently served under the circumstances prevailing at the old building. Benefits realized include increased capacity together with reduced operating costs. The construction of a new building provided a number of advantages in this respect, perhaps the most important being the opportunity to start from the ground up in developing a warehousing system that would put the company in a position to be at the consumer's door first with the most and to remain competitive. Among the specific advantages were:

1. The opportunity to develop a layout correcting many of the ills existent in the old building.
2. Greatly improved and much larger shipping and receiving facilities.
3. Usable storage height of 16 feet, opening the door for up-to-date handling methods and equipment and provid-

## Compound Carriage Gives Extra Lift

An additional 14 inches of lift may now be had on the Lewis-Shepard SpaceMaster electric fork truck. Made possible through the use of a compound carriage, recently designed and developed by their engineering department, the new carriage gives additional lift, with no increase in collapsed height. Capacity remains approximately the same, with only 3" extension of load center. Extra lift is especially desirable where high stacking and low ceilings are prevalent. Write in # 283 on Reader Service Card for more information.



ing greater storage capacity per square foot.

The move to the new location was accomplished four months prior to the time this article was written, and all possible operating economics have not as yet been realized. However, in this short period of time, overtime hours have been reduced 30 percent and the warehouse force 15 percent during a period when sales volume has shown an actual increase. Other benefits of an intangible nature include:

1. Reduction of errors and customer complaints and therefore retention of "happier" customers.
2. Improved employee morale due to the many improvements in the new building and handling system.
3. The ability to handle more orders faster.

In essence, then, this article attempts to do two things—first—to tell the story, in some detail, of a particular project and second to show the advantages of a com-

pletely integrated and well planned modern warehousing and handling system.

Since Carpenter does not maintain engineering personnel on its staff, it called in the Engineering Economics Section of Midwest Research Institute in Kansas City, Mo., to provide assistance in carrying out phases (2) and (3) of this over-all program. Laurence R. Hoagland, Vice President and Director of Operations for Carpenter Paper Company at Omaha, Neb., directed the work for the sponsor.

Circle No. 32 on Reader Service Card

## CUT DRAWING BOARD TIME ON PLANT LAYOUTS



Now you can "draw" material conveyors, structural components, center lines, etc., simply by unrolling printed self-adhesive tapes and mounting them on your layouts. Many different symbols are available, all predrawn and ready for application.

The CHART-PAK plastic board provides an ideal surface for layouts—easy to use and reuse, washable, durable, neat.

With CHART-PAK you will have faster planning and better layouts, at lower costs. Write for descriptive bulletin.

## F. D. is here !!!

(See page 145)

### ATTACH TO YOUR LETTERHEAD

Please send me full information about the CHART-PAK method for:

- Plant Layouts  Organization Charts  
 Office Layouts  Graphic Charts

95-B



**CHART-PAK, Inc.**  
104 Lincoln Ave.  
Stamford, Conn.

### PNEUMATIC HOIST with Rotary Air Motor

Capacities 250  
lbs. to 1 ton  
Fast Lifting  
Speeds



Pulseless, rotary  
air motor; no re-  
ciprocating parts.

- Worm Geared
- Compact—Light Weight
- Exceptionally Smooth Running
- Close, Sensitive Control

PT Hoist shown with monorail trolley; can also be furnished with upper suspension hook. Write for P.T. Bulletin 708.

**DETROIT HOIST & MACHINE CO.**  
#209 Marrow St., Detroit 11, Mich.  
Designers and Manufacturers Since 1905

## NEW WRIGHT-HIBBARD Hydraulic High Lift Platform Trucks

### NEW DESIGN! NEW PERFORMANCE! GREATER WORK CAPACITY!

These Wright-Hibbard trucks have been mechanically redesigned to transport and tier skids and skid boxes more rapidly and at lower cost. One of their important new features is the hydraulic lift, operated by a separate motor, which permits the operator to raise or lower his load while the truck is in motion. Result is faster, smoother, quieter and more economical handling of more loads per day. Capacities 2000 to 4000 lbs. Platform sizes to suit any need. Write for bulletin giving general specifications and engineering data.

Precision-Built Industrial  
Electric Trucks Since 1917



Model TRC-6  
WRIGHT-HIBBARD  
High Lift Platform Truck

# WRIGHT-HIBBARD

Low Lift Platform Trucks

High Lift Platform Trucks

WRIGHT-HIBBARD INDUSTRIAL ELECTRIC TRUCK COMPANY, PHELPS, N.Y.

Fork Lift Trucks

Burden Carrying Trucks

## WHICH V-BELT is best for you?



- ★ In this way you can make up V-Belts in any length to fit any drive the fast economical way — V-Belts that perform exceptionally well.
- ★ In contrast to link-type belts these ALLIGATOR fastened V-Belts have just one strong joint . . . stretch and follow-up maintenance are reduced to a minimum.



Ask for Bulletins V-215 and V-216  
Order From Your Distributor

FLEXIBLE STEEL LACING COMPANY  
4702 Lexington Street, Chicago 44, Illinois

### ALLIGATOR V-BELT FASTENERS

Circle No. 72 on Reader Service Card  
152

## WALKIES . . .

(Continued from page 85)

### New Uses Found Continually

Almost every industry can cite case histories of handling problems that were solved through the application of walkies. Here are a few of the latest examples:

**Warehousing:** In one general merchandise warehouse, incoming goods were formerly loaded on old fashioned trucks, pushed to elevators, raised to upper floors, and moved to storage areas, where they were handstacked.

Now, incoming goods are loaded on pallets inside the carriers and moved by low-lift pallet walkies to the elevator. On the upper floors, loads are picked off by a stacking-type walkie, carried to the storage area and stacked in unit loads. In this instance, benefits include lower costs due to reduced handling, with accompanying decreased chance for damage, less physical effort, increased use of available storage area, and fewer accidents.

Another warehouse, during order picking, uses a walkie to haul a pallet, makes up load units in orders as the truck snakes up and down aisles. Outgoing goods are thus loaded on carriers in order lots.

In refrigerated warehouses, walkies enable operators to spend less time in cold areas. This is a



"You know how women are,— always moving things around."



Cut production costs! Use the new RANTOTE "877", designed to "take it" under heavy abuse. In grueling laboratory high-compression tests, stacked RANTOTES withstood 5,000 lbs. of pressure with no resultant damage! Proof to YOU that RANTOTES last longer — cost less!



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Distributor Inquiries Invited

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FLOW • FEBRUARY, 1954

Circle No. 12 on Reader Service Card for more information

## Handling: Small Production Parts Bench to Bench Without Trucking

vital consideration because, together with the health factor, goods must be carefully stacked to permit proper air circulation and, under manual methods, this can be a time-consuming operation.

Metalworking: One very large midwestern metalworking plant has substituted push carts and muscle power to bring in raw materials and remove processed parts from machine areas. Because of the crowded quarters, the company chose walkies which not only eliminated excessive physical effort but also permitted unit load handling. A few walkies, adroitly located in even non-crowded machine areas, can eliminate waiting time for larger trucks, which are too often on duty elsewhere in the plant.

Another company used large fork trucks to store finished goods awaiting shipment. It was necessary to maintain 12-foot aisles. Now, with the use of stacking type walkies, aisles have been narrowed to seven feet, and storage area has been increased 30 percent. In addition, certain limited floor areas are now being used for storage (walkies can be used because of their light weight), thereby further increasing available storage facilities.

Still another metalworking plant uses walkies during assembly operations to place and remove goods where large trucks can't get in to do the job. The same company has one heavy-duty elevator and several low-capacity units. Formerly, the big trucks had to travel excessive distances to the one larger elevator, which was also often delayed on other floors. Now, walkies can use any of the elevators, valuable time is saved, and the riding-type vehicles can be used for more important tasks.

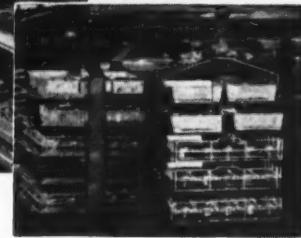
Food Industry: One meat packing plant is chopped up into many small corridors with small doors. As with many companies, an older building did not lend itself to effective, larger modern handling equipment. However, walkies have successfully replaced manual operations—are ideal for handling in the inherently crowded, old-fashioned buildings.



THE ALLIED 2-28 CONVEYOR

ALWAYS

- at the right work bench
- at the right time for the operation
- at the right level to receive or discharge work parts



A traveling, stock conveyor that carries diversified small work parts to and from points of operations. It goes here and there smoothly, tucked away in small spaces; passes work benches at proper level for discharging and receiv-

ing parts. It eliminates hand traveling and confusion of distributing parts to various, separated points of operation. The 2-28 is an interesting conveyor and it steps up production. Ask us about it for your plant.

ALLIED STEEL AND CONVEYORS, INC.

17381 HEALY AVENUE • DETROIT 12, MICHIGAN

ALLIED DOES THE WHOLE JOB... FROM BEGINNING TO END!

### Why they buy NEFF & FRY Storage Bins

In the photograph you see how the diagonal-ended staves of a Neff & Fry Storage Bin are laid up. They are grooved and beaded to lock together. Each course is encircled with as many galvanized steel rods as needed to withstand the thrust of the load.

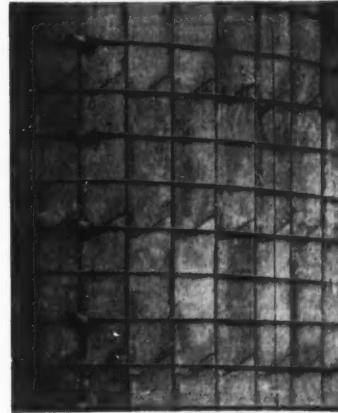
Our bins (often termed silos or tanks) are used by scores of America's leading companies for handling more than 80 kinds of flowable bulk materials; notably, cement, coal, clay, grain, gravel, ore, sand, wood chips.

#### The reasons:

Formed under tremendous hydraulic pressure, the staves are rocklike in strength and density. They do not spill, rust, or burn.

Since the walls are only  $2\frac{1}{2}$ " thick, the bins have great capacity in relation to outside diameter; no wasted ground area.

Despite the thin walls, the structures have sufficient load-bearing ability to carry heavy superstructures without additional supports.



Our wide experience enables us to make valuable suggestions regarding materials handling systems and equipment.

If you want to invest a few minutes in mighty profitable reading, ask for our folder, "Bins with the Strength of Pillars."

THE NEFF & FRY CO.  
110 Elm St., Camden, Ohio

NEFF & FRY → SUPER-CONCRETE STAVE  
STORAGE BINS

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## Buschman PORTABLE ALUMINUM CONVEYORS

### WHEEL OR ROLLER TYPE

Lightweight, new Buschman Portable Aluminum Wheel and Roller Conveyor saves time and energy. Ruggedly constructed and rust-resisting, too. You can use it indoors and out! It's completely interchangeable with steel conveyor sections. Easy to set up and move.

All-aluminum except for heavy duty, grease-packed, dust-protected, hardened steel bearings. 10 ft. section only 39 lbs. compared to 81 lbs. for steel. Complete range of reversible curves; straight sections from 5 to 10 feet long, 12, 15 and 18 inches wide.

WRITE FOR FREE BULLETINS 15 AND 18 TODAY!



THE E. W. BUSCHMAN CO.  
4450 Clifton Ave., Cincinnati 32, Ohio

Representatives in Principal Cities  
Circle No. 28 on Reader Service Card  
154

### SAFE SHIPPING METHOD

(Continued from page 131)

cially equipped box cars with steel and wood cross members which lock securely into wall belt rails were purchased.

In the new cars, no conventional dunnage is needed to secure the lading. The equipment is built into a box car as a permanent part of the car. Wall belt rails, welded to the steel car posts, have perforations along their top edges and it is into these perforations, spaced at one-inch intervals, that two-fingered steel end-fittings of the cross members lock firmly in place. Because of the half-inch intervals of the perforations, it is possible to achieve almost limitless backward and forward adjustment of the cross-members against almost any lading normally carried in a box car.

Wall belt rails are spaced from car floor to roof at intervals of about 18 inches, providing a wide

variety of adjustments vertically as well as horizontally. The spacing of the rails may vary with the requirements of each carrier, but the 18-inch spacing has been found to accommodate most conventional box car loads, either single or double decked. Deckboards, used as flooring for second or third deck loads, and bulkheads, which may be sandwiched between lading and locking cross-members to distribute the bracing effort of the cross members, are also part of the equipment.

Tennessee Eastman builds loads in three tiers from floor to roof. The floor load is locked in place in sections, both as a convenience in "stop off" deliveries and to insulate the load sections against damage from car impact. Deckboards are laid across the top of the floor level load, then a second tier of drums is built. That second deck load is locked into position in the same manner as the first level load. A third tier follows.

The loading plan is determined by the size of the drums. In some



You can't beat STEEL for STRENGTH . . . and you can't beat the DICO 65R for all-steel LIGHTWEIGHT construction. Here's the type hand truck that you've been looking for . . . a "light" all-steel truck that is built for load bearing strength and abuse. Strong steel "box-type" side shafts for maximum strength. The DICO 65R Truck is equipped with the finest easy rolling DICO "H-D" molded-on rubber-tired, roller bearing wheels.

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**DICO**  
"ALL-STEEL" TRUCKS  
LONGER WEAR  
and  
MAXIMUM STRENGTH  
DES MOINES 5, IOWA



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FLOW • FEBRUARY, 1954

cases, it may vary from one load level to the next. If there are any small drums, cartons or paper bags in the shipment, they are usually loaded nearest the roof of the car. The shipping supervisor uses a cutaway car diagram loading form which is filled out before the loading crew begins work. A copy of the diagram is tacked to the inside wall of the car and left there for the guidance of the consignees en route so that at each point it will be easy to determine where any portion of the load is located. Of course, lading last in the car is always first out.

The average load in a car runs from 80,000 to 90,000 lb. with maximum loads running up to 100,000 lb.

What is the aggregate picture at TEC as a result of using the Santa Fe's specially equipped cars? Here's what is reported:

**Damage Claims**—From a \$300 —\$1500 per car claim to virtually nothing.

**Dunnage Costs**—Formerly, TEC was spending about \$35 per carload shipment for wood,

nails, etc., little of which had re-use value. With the new cars, this has become an outright saving.

**Increase Loads**—Present average of 80,000 to 90,000 lb. per car compares to former 50,000 to 60,000 lb. per car. This was made possible through the third tier of drums which can be added to each car.

**Time Saving**—A 70,000 lb. carload can be put into one of the new cars in the same time formerly required.

**Carrier Revenue**—It has been estimated that one of the new cars returns to the owner-carrier as much revenue as one-and-a-half to two ordinary box cars loaded to capacity.

**Car Cleaning**—Because it is not necessary to drive nails into the walls of the floors of the specially equipped cars, car cleaning time has been shortened. There is no danger of subjecting lading to damage from nails or splintered walls.

# GRIPPER

## WOVEN WIRE

# SLINGS

give you

## GREATER UTILITY



Specially designed handles permit use in choke or basket hitch. Broad, flat sling body gives greater load stability. Complete flexibility gives greater gripping power, even around small radius loads.

Woven wire construction eliminates kinking, tangling, snarling. When not in use, they'll roll up into a compact coil or hang flat against a wall.

All metal construction means long life, freedom from damage, even in handling sharp edged loads.

Available in standard lengths and widths with capacities up to 100,000 lbs. Special sizes on request. Every sling pretested to meet loading specifications.

See your mill supply, materials handling or safety equipment distributor. Or, write direct for complete catalog and name of nearest distributor.



### The Cambridge Wire Cloth Co.

Dept. W • Cambridge 2, Md.



Circle No. 29 on Reader Service Card

## before you buy a fork truck or lift truck — be sure to see the

NEW

marforge

COMBINATION TRUCKS

FORK TRUCK



SKID LIFT TRUCK



TRACTOR



PALLET LIFT TRUCK



Whether you're a small organization or a large plant, you can obtain extra advantages by using Market Forge Materials Handling equipment.

Consider MARKET FORGE — Your Best Source for: Electric or Gas Powered

- FORK TRUCKS • PALLET LIFT TRUCKS
- SKID LIFT TRUCKS • TRACTORS

Available on Deferred Payment or Rental Basis

Market Forge Company  
EVERETT 49, MASSACHUSETTS

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FLOW • FEBRUARY, 1954

# BELT

## PORTABLE CONVEYORS

*move boxes, bags + bulk*

**PUT THRIFT IN EVERY MATERIAL SHIFT**



### MODEL R VERSAVEYOR BAG AND BOX HANDLER

Here Versaveyor feeds a gravity conveyor, saves time and manpower stacking and storing. Guide rails, floor-to-floor stands and other accessories available to fit this versatile unit to many cost-cutting jobs in your operation.



### MODEL TL VERSAVEYOR

Slashes handling time, speeds truck turnaround. Can also work horizontally carrying loads back into trailers. Stands upright when not in use.



### MODEL S HANDY-HANDLER

Lightweight, multi-purpose conveyor for handling coal, salt, sawdust, feed and similar bulk materials.

Write for free literature on any of the above conveyors or outline your special handling problem and we'll forward additional information.

### THE BELT CORPORATION

5001 STAHL ROAD

ORIENT, OHIO

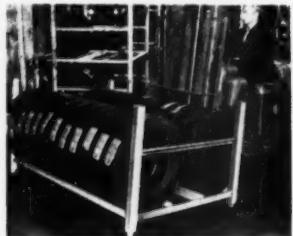
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### WHAT'S NEW IN EQUIPMENT . . .

(Continued from page 46)

#### Double Row Racks

If the shape and weight of goods is such that transporting and storing them in standard size racks results in waste of equipment capacity and space, Equipment Manufacturing, Inc., recommends their recently developed "double row" racks. These are said to double the load without increasing



the rack size proportionately. Tires, with large space displacement in relation to weight, are offered as an ideal example of materials for which these racks are suited. Racks are constructed of heavy gauge, square steel tube with welded joints. Nesting caps on feet facilitates stacking. Longitudinal dividers of wood or steel, forming a "V", can be included to prevent rolling or shifting.

Circle 180 on Reader Service Card for more information

#### Portable Gantry Crane

Called the "Trail Crane", a portable gantry, of capacities to 60 tons, travels as a compact, semi-

### MERRILL MATERIALS HANDLING DEVICES



### MERRILL BROTHERS

56-74 ARNOLD AVENUE MASPETH, N. Y.

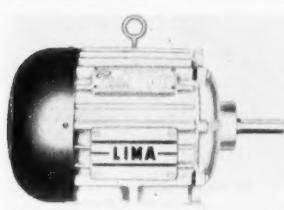
Circle No. 92 on Reader Service Card for more information  
FLOW • FEBRUARY, 1954

trailer unit 31 ft. long, 8 ft. wide, and 10 ft. 6 inches high. It is hauled at highway speeds by conventional truck tractor and is said to be set up within an hour by the average 3-man crew. Power for set-up as well as operation is provided by the Trail Crane's diesel or gas-driven generator set. Span is 30 ft. and trolley travel 22 ft.—ample for the transfer of loads between rail cars and trucks. The addition of optional rail trucks converts the unit into a traveling gantry. The equipment is intended for all sorts of handling operations. The manufacturer—Noble Company—points out that in yard operations a single Trail Crane can serve the purpose of several permanent installations. Circle 181 on Reader Service Card for more information

#### Totally Enclosed Fan-cooled Motor

In ratings of from three quarter horsepower at 900 RPM to 20 H.P. at 3600 RPM, NEMA frame sizes 224 to 326 inclusive, a new design of totally enclosed, fan-cooled motor is now produced by The Lima Electric Motor Co. Called the "Type E", the line is

said to feature: rigid cast iron frames with integral feet; deep, integrally cast fins for cooler operation; pre-lubricated sealed ball bearings which require no greas-



**LET US SHOW YOU HOW TO  
CUT WAREHOUSING  
COSTS...as much as  
**Paltier** 75%**



FLEXIBLE  
PALTIER



PYRAMID  
RACK



PALTEAM  
HARDWARE



DO-ALL  
BOX



PALLET  
RACK

PALTIER records are filled with proof after proof of storage cost cuts in the handling of every conceivable type of product. We can cut your storage costs, too!

##### ASK US:

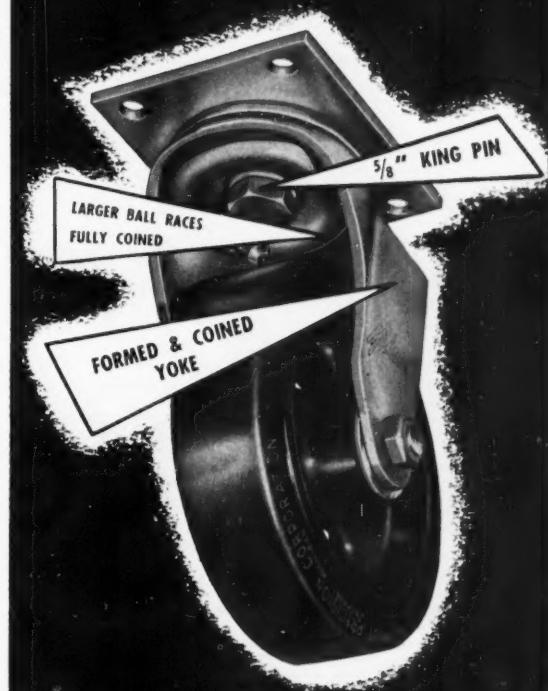
- PALTIER studies your storage problem—engineers and designs a system for your specific needs.
- Many PALTIER installations pay for themselves "right from the start."
- This booklet tells the PALTIER story, ask for it today.



**THE PALTIER CORPORATION**  
1709 KENTUCKY ST.  
MICHIGAN CITY, IND.

Circle No. 108 on Reader Service Card for more information  
FLOW • FEBRUARY, 1954

# It's New!



## The Midwest PressCoin Caster

Here is the caster that industry has been waiting for. It's inexpensive, rolls and swivels easily and is the strongest caster of its type you can buy, for medium-light duty.

Designed to hold ball bearings firmly in place when subjected to shock over rough floors, etc. Midwest PressCoin Casters are designed with top plate and Raceways in separate detail. It's built better, works better, lasts longer.

### To Get the Best-Buy Midwest

Write Today for Complete Information

**Midwest PRECISION  
CORPORATION**

301 Hillsdale • Jackson, Michigan

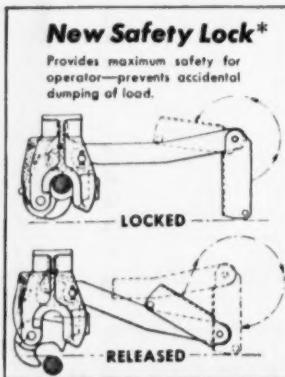
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## Phillips "Skid-Dump"

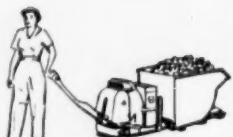
Bulk materials of all kinds are handled with maximum efficiency at minimum cost . . . with the Model F-1 "Skid-Dump". Used with pallet or fork lift truck, it automatically dumps and returns to original position. Smooth, rolled edges of 3/16" steel plate, welded undercarriage provide safety, long-life, strength and durability. Capacity—1 cu. yd.

**Write for Bulletin E-15**



### New Safety Lock\*

Provides maximum safety for operator—prevents accidental dumping of load.



Heaviest materials easily handled with pallet truck.



Automatically dumps materials, returns and locks in original position.



Conveniently stacked, empty or full.

MANUFACTURERS  
SINCE 1863

**PHILLIPS**  
MINING AND MATERIALS HANDLING COMPANY

MATERIALS HANDLING EQUIPMENT

2300 JANE STREET • PITTSBURGH 3, PA.

Circle No. 22 on Reader Service Card for more information  
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ing or cleaning for normal life; and a specially designed cast aluminum fan to provide high velocity air over the cooling fins. The motor is available in 2 or 3 phase, all standard frequencies, and commercial voltages below 600. It is supplied for vertical, wall, ceiling and standard horizontal floor mounting. A one-year guarantee is issued with each motor.

**Circle 182 on Reader Service Card for more information**

### Three-Unit Handling Combination

Integrated moving, stacking and storing is the function of the Market Forge Unit System (of Market Forge Co.), which consists of the Load Unit (boxes), Load Racks (to hold Load Units), and the Load-Mobile fork truck. Principal benefits of the system are said to be uniformity, efficiency, maneuverability, space saving, and better inventory control.



The Unit Load is an all-steel welded box on legs, designed for multiple stacking. It may also be shipped "as is". It has a rated capacity of 2000 lbs., measures 27 1/4 in. square, 18 in. deep (inside

for  
efficient  
materials  
handling

**MARIETTA**  
concrete  
storage systems

A MARIETTA concrete stave silo is the key to an efficient materials-handling installation. These systems are engineered and erected to improve handling facilities and to lower operating costs. There's no limit to the capacity or to the materials-handling equipment that can be incorporated into the walls, floor or roof of a MARIETTA silo. For complete data and construction details, write for Bulletin 4393.

**the Marietta Concrete Corp.**

MARIETTA, OHIO

Branch Offices: 501 Fifth Avenue, New York  
17, N. Y. • Pulaski Hwy. at Rose Rd.  
Baltimore 21, Md. • 805 Bessemer Bldg.,  
Pittsburgh 22, Pa. • Hollywood, Fla.

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**FLOW • FEBRUARY, 1954**

dimensions) and weighs 70 lbs. The Load Rack is self-contained, all steel, built to hold 5 Load Units perpendicularly. It will hold up to 10,000 lbs., has an overall height of 9 ft. 9 in., is 37 in. wide and 30 in. deep, and weighs 140 lbs. The Load-Mobile, with overall dimensions of 31x55 exclusive of forks, weighs only 2600 lbs. with battery, is highly maneuverable for use in narrow aisles and crowded stock areas. It handles loads to 2000 lbs.

Circle 183 on Reader Service Card for more information

#### Tote Box for Small Parts

Designed to increase efficiency in handling very small parts, a new and smaller NesTier tote box is now produced by Charles William Doeple Mfg. Co. Intended to complement the two larger sizes in this material handling system, the smaller unit is said to be able to carry 200 lbs. with

the standard handle and 400 lbs. with the heavy duty handle. It weighs 3 lbs. and has a volume of 238 cubic inches, measuring 12 in. long, 7 1/4 wide and 4 3/4 deep. Like the larger units, the new NesTier nests and tiers through the flipping of the handles at both ends. When nested, the boxes are said to occupy only about one-twelfth the space required for the tiered



*These Bond Casters are Your Best Buys for TROUBLE-FREE SERVICE*



36-A Series—Double Ball Race Swivel Caster



1-A Series—Stationary Caster



41-A Series—Structural Steel Stationary Caster



40-AH-VG Series—V-Grooved Wheel Structural Steel Heavy Duty Swivel Caster



3-A Series—Single Ball Race Swivel Caster



Dual Wheel Swivel Caster

Ask your industrial distributor . . .

he knows that for dependability, economy and trouble-free materials handling you just can't beat Bond Casters. Your distributor has the right Bond Casters for your jobs. Get your copy of Bond Catalog K-38 from him, or write direct.

BOND FOUNDRY & MACHINE CO. —  
Manheim, Pennsylvania

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FLOW • FEBRUARY, 1954



It's good business to watch weights closely! Check at receiving, shipping, production stages without delaying handling.

Put a stop to paying for dunnage, inaccuracies, other's miscalculations that rob you of your profit. Weigh loads as you lift them to move them by crane or hoist. Speed inventories, eliminate labor and equipment tie-ups at the weighing station.

Thousands of HYDROSCALES are at work in large and small plants all over the country.

*The cost of weighing has been reduced to a minimum by—*

# HYDROSCALE

#### HYDRAULIC CRANE SCALE

36 models  
500-200,000 lbs.

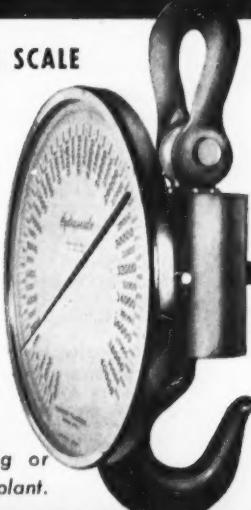
12", 24", 30" dials

Tilt face models for high level reading

Combined reading kilogram-pound dials

Batching models indicate pour-off

Write for our catalog or demonstration in your plant.



HYDROWAY SCALES, INC.

20624 WEST 8 MILE ROAD P. O. Box 4754 - DETROIT 19, MICH

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# Automatic Scrap Removal on Any Machine Tool with **CHIP-TOTE**

**ELIMINATE SHUT-DOWN SPEED PRODUCTION**

Get 60 minutes production every hour from your machine tools! CHIP-TOTES remove chips, turnings and borings continuously and automatically from machine tools while they are in operation... there's no need to shut down valuable machinery for manual scrap removal.

CHIP-TOTES can be furnished to serve practically any automatic or multiple-spindle machine. Speed of operation is synchronized with the machine's metal-removing capacity and rate of coolant flow.

For utmost efficiency, a battery of CHIP-TOTES can be set up for discharge onto MAY-FRAN hinged-steel belt conveyors which transmit scrap to disposal point.

For information on how CHIP-TOTES and MAY-FRAN engineered handling systems can increase your production, write today for catalog.

**DESIGNERS AND ENGINEERS OF  
COMPLETE SCRAP HANDLING SYSTEMS**



# MAY-FRAN ENGINEERING, INC.

1611 CLARKSTONE ROAD • CLEVELAND 12, OHIO

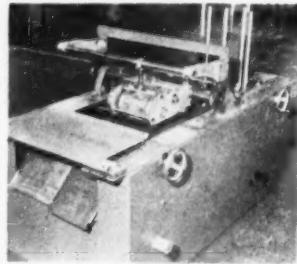
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position. They can be tiered approximately 6 ft. without buckling or bending of sides. This equipment is claimed to be particularly suited for manufacturing operations where small parts must be kept together throughout production and inspection. Since each end of the box has an angled opening, stock can be checked at a glance.

Circle 184 on Reader Service Card for more information

### Automatic Marking Machine

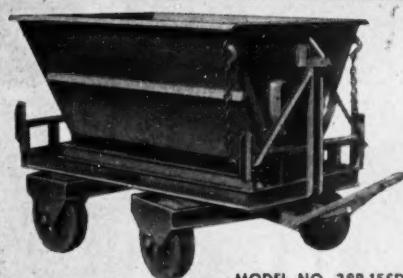
Printing on flat, rigid and relatively thick objects is now possible with a modified version of the Markocoder "3M" imprinting machine made by Adolph Gottscho, Inc. Material to be printed is stacked in the machine's magazine which automatically feeds one piece at a time to the printing section. The printed piece is then discharged to a tote box or conveyor. Copy changes are made quickly and easily by use of interchangeable die wheels. The Markocoder "3M" operates at speeds up to 60 units per minute and is adjustable to handle objects ranging from 2"x2" to 9"x9" and from 1/16" to 1/4" thick.



Circle 185 on Reader Service Card for more information

# JAKES

America's Finest  
Industrial Trucks and Trailers



MODEL NO. 38B-15SD  
Capacity 1½ cubic yards or 10,000 pounds.  
Equipped with pressed-on tires and Timken  
bearings. Also available in 1 and 2 yard  
capacities.

Specification Sheet Available.

### JAKES FOUNDRY COMPANY

Established 1891

2800 Charlotte Avenue

Nashville 9, Tennessee

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FLOW • FEBRUARY, 1954

Circle No. 48 on Reader Service Card for more information

### Double Telescopic Mast

A new mast for Towmotor fork trucks makes it possible for a single truck to work in boxcars and highway trailers as well as to high-stack in storage areas. Produced by Towmotor Corp., and called the "Double Telescopic Mast", it can be lowered sufficiently for use under low ceilings or extended to great heights when desired. The mast consists of two short masts: the first mounted in conventional position; the second in place of the carriage. Carriage and forks are, in turn, mounted on the second mast. Both masts may be operated independently or simultaneously. When working in low-ceiling areas, forks are raised or lowered with both masts down. For high-stacking, the second mast is raised by the first, adding the lift height of one to that of the other. The new mast can be supplied in 6 different combinations—varying in lifting height of each mast and total height of lift. One of the combinations is less than 6 feet high with masts lowered, but has a lift height of 14 ft. Another provides a maximum lift of 18 ft. The Double Telescopic Mast is available for Towmotor Models 390, 420, 460 and 480-P.



Circle 186 on Reader Service Card for more information

### High Capacity Roller Conveyor

Intended for permanent installation where equipment will be subjected to heavy or impact loads, the 1.9 Series (1.9 inch outside diameter) roller conveyor line is now being manufactured

by The Rapids Standard Co., Inc. The line offers a choice of 154 new straight section models and 38 curves for handling many kinds of materials in all types of industry.

The 1.9 Series is manufactured in 11 regular widths from 12 to 51 inches, with choice of 7 roller spacings from 2 1/4 to 12 inches on centers. Capacity is 250 pounds per roller in normal duty use, subject to frame capacity of 2750 pounds (including weight of conveyor) when supported on 5 foot centers. Single and double lane curves match straight sections. Both 45 and 90 deg. models reversible for right and left turns are available. Curved and straight sections are furnished with plain ends but can be had with bar and hook type connectors if desired. Stands for the new series



1.9 SERIES ROLLER



keep  
production  
materials  
moving  
with

### ELECTROLIFT WORM DRIVE HOIST

Safer, smoother, faster action features of ElectroLift will keep your materials and loads moving economically. One-man, quiet operation. Wide selection of speeds, capacities and controls.

For further information consult your ElectroLift representative listed in telephone directory.



ElectroLift, Inc., 30 Church St., New York 7, N. Y.

WEIGH MATERIALS ON THE SPOT  
SAVE UP TO 22% ON LABOR COSTS



Compact  
Low-Cost

DILLON  
Weight Indicator

Picking materials up, moving them to a scale, setting them down and then picking them up again means double handling and greatly increased operational costs. With the DILLON Weight Indicator, loads are checked on the spot the instant they are lifted. Accuracy is guaranteed to be within ONE division or less at any point on the dial. Adjustable for large tare loads. 16" dia. dial. Swivel hook. Accidental overload and shock protected. 8 capacities from 0-250 pounds up to 0-20,000 pounds. Portable—weather-proof—dust-proof. Each unit checked with certified dead weights. Extreme utility at LOW cost!

Write today for illustrated, descriptive literature

**W. C. DILLON & CO., INC.**

146209 KESWICK ST., VAN NUYS (Suburb of Los Angeles) Cal.  
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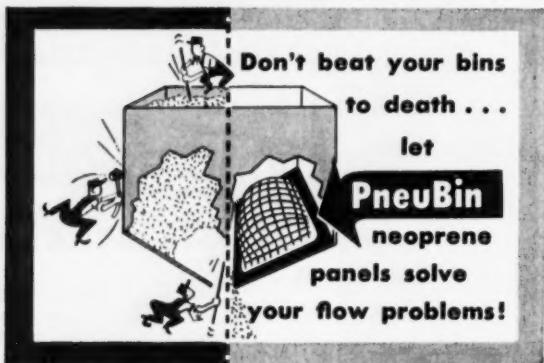
# FLOW STOPPAGE COSTS MONEY!

Have you ever figured how much flow stoppage costs you in:

- LOST STORAGE CAPACITY?
- LOST MAN-HOURS?
- LOST PRODUCTION TIME?

PneuBin will solve your flow stoppage problems and help reduce your operating expense. When materials hang-up in your bins and hoppers, PneuBin starts them flowing again. The PneuBin unit consists of a steel-backed neoprene panel, mounted on the inside wall of the bin. By the pneumatic inflation and deflation of the panel, the bin contents are displaced and disturbed to activation. After the diaphragm has collapsed, the air control unit (operating off the regular plant air supply) starts another cycle of inflation and deflation. The process continues automatically at whatever frequency is set on the air controller.

Because the neoprene panel is resistant to oils and most chemicals and is also thick and tough enough to withstand severe abrasive service, PneuBin is applicable to most any bin flow problem.



**Sizes:** PneuBin panels are available in 14 standard sizes, 4" to 24" wide, 6" to 72" long. Special sizes can be made if required in quantity.

**Send for "Flow Stoppage Report"** and free literature. PneuBin engineers will gladly make recommendations, with no obligations on your part.

PneuBin is a product of  
GEROTOR MAY CORP.  
BALTIMORE 3, MD.



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are fully adjustable, cross braced and pierced for lagging to the floor.

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## High Lift Platform Truck

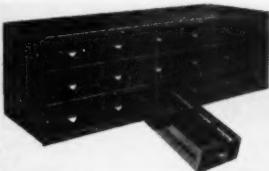
Especially intended for stacking skids, a 4000 lb. capacity, high-lift platform, motorized hand truck has been added to the Work-saver line of the Yale Materials Handling Division, The Yale & Towne Mfg. Co. It is also for use as a high level loading and unloading work surface platform. Available in platform lengths up to 60 inches, the truck will lift a loaded platform 120 inches above floor level. The equipment has two widely spaced, heavy duty caster wheels to provide side-to-side stability for high lift operations. Other features claimed for this new model include high maneuverability, compact size, light weight, and easy operation.



Circle 188 on Reader Service Card for more information

## Compact Small Parts Cabinet

Designed for use on benches, counters and shelves, this line of small parts cabinets and cases provides variable drawer compartments for efficient segregation. Slots on one-inch centers permit quick rearrangements to accommodate various quantities of parts. Handles and label holders are provided on the front of each drawer. The equipment is finished in baked green enamel. Manufacturer is Bay Products, Inc.



Write 285 on Reader Service Card for more information

## Spreader for Ice Control

Small and convenient enough to ice-proof walks, yards, driveways, loading platforms and other outside plant areas, the Model SC-52 Pull-Type Spreader is easily attached to any truck, according to the Baughman Mfg. Co. The equipment spreads a fine or heavy coating (easily adjustable) of salt, sand, cinders,



FLOW • FEBRUARY, 1954

calcium chloride, chips or other skid-proofing materials. Self-powered by its own traction, the spreader covers a 360 deg. circle under the truck wheels. It comes with a tow hitch designed to fit any truck or quick attachment or removal.

Circle 189 on Reader Service Card for more information

#### Improved Appliance Truck

Radical improvement claimed for an appliance truck now manufactured by the Nutting Truck and Caster Co. is embodied in the stair glides. Each glide consists of an aluminum alloy assembly in which a rubberized fabric V-belt runs on 2 aluminum pulleys and 12 tubular steel rollers encased between two bolted side members.

Bolted construction has been provided for easier maintenance in the event proper lubrication has not been maintained or foreign material needs to be removed. Closely spaced, the 12 steel rollers are of proper size to allow the V-belt to run freely for easy movement up or down curbs and stairs. The new truck is intended to handle all sorts of home appliances



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## **the ANSWER to lifting and dumping bottlenecks**

**ELIMINATE MANUAL LIFTING** and speed up materials handling with a Cesco skip-hoist Dumper. Reduce handling time and costs. Single and multi-purpose portable models in standard heights from 6 to 10 ft. Stationary models to 20 ft. Up to 1500 lb. per load, 100 loads per hour. Easy, safe push-button control eliminates accidents.

**LIFTS AND DUMPS DRUMS, BOXES,  
BULK, BAGS, MECHANICALLY**

**ESSEX CONVEYORS, INC.**  
165 Franklin Ave. • Nutley 10, N.J.  
**COLSON EQUIPMENT & SUPPLY CO.**  
1317 Willow Street • Los Angeles 13, Calif.



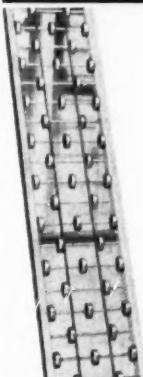
**CESCO SKIP  
HOIST DUMPER**

**SUPER-Light**

**SUPER-Portable**

**Speedways NEW Aluminum  
Gravity Wheel Conveyors —**

**will do many materials handling jobs  
in many different places in your plant**



• The unmatched economy of SPEEDWAYS new Aluminum Gravity Wheel Conveyors is in their super-lightness. Being almost 66 2/3% lighter than steel types, one Aluminum Conveyor system will do double-duty in many places in your plant.

• Made of super-strong, highly-rated aluminum alloy that is actually stronger and tougher than steel, Speedways Aluminum Gravity Wheel Conveyor will move 850 lbs. live load per 10 linear feet.

• SPEEDWAYS Aluminum Gravity Wheel Conveyor is designed to save you time . . . money . . . labor . . . and to reduce accidents. It offers an all-around economy that is easy to afford.

Write for complete details and new Bulletin F-553.

**SPEEDWAYS**

**CONVEYORS  
INCORPORATED**

202-208 RHODE ISLAND ST.

BUFFALO 13, N.Y.

**HOBBS  
Engine Hour  
METERS**

**APPROVED  
AND  
RECOMMENDED**

**... by leading  
manufacturers**

HOBBS ENGINE HOUR METERS are installed as original equipment by leading manufacturers of materials handling equipment . . . and recommended as an approved accessory. A primary reason for this acceptance is the fact that the HOBBS ENGINE HOUR METER is not a revolution counter, but a true timing instrument that records hours and minutes of equipment operation. It takes the guesswork out of maintenance . . . helps prevent breakdowns and prolong equipment life.

**PROMPT DELIVERY!** Order now from your factory branch, representative or distributor . . . or send for Catalog 569 for COMPLETE INFORMATION.

ORIGINATED AND MANUFACTURED EXCLUSIVELY BY  
**John W. Hobbs Corporation**  
2061 YALE BLVD., SPRINGFIELD, ILLINOIS

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Circle No. 156 on Reader Service Card for more information

# Well Stacked!



Pallet Racks



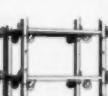
Drum Racks



Coil Racks



Stock Racks



Dolly Racks

WRITE FOR  
THIS NEW  
CATALOGUE →



**EQUIPMENT  
MFG. INC.**

21552 HOOVER ROAD,  
DETROIT 5, MICHIGAN

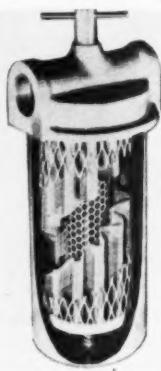
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as well as other heavy, cumbersome items. It is of all tubular steel construction, with extra wide strap and ratchet strap tightener to secure loads. A padded frame protects finishes. Overall width is 24 inches; height, 60 inches. Six inch diameter, solid rubber wheels are provided with self-lubricating bearings.

Circle 190 on Reader Service Card for more information

## Water Filters

Adaptation of Marvel Synclinal Filters (for filtration of oil in hydraulic and low pressure liquid circulating systems for water applications has been achieved by Marvel Engineering Co. The company says no changes have been made in the basic synclinal design—which features maximum active filter area, longer periods of operation, no moving parts, and simplicity of maintenance. Filters are available for either sump or line installation in 8 individual capacity size units from 5 to 100 G.P.M.



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## METZGAR Floor-to-Floor CONVEYORS HAVE MANY USES



PUSH BUTTON  
CONTROL  
AVAILABLE



ELEVATION  
BOOSTER IN  
GRAVITY LINE



CARRIES CONVEYOR  
OVER FIRE DOORS  
OR TRAFFIC LANES

Easy to install standard O. A. widths  
— 18", 22", 30". Length as required.  
Top quality 3-ply 28 oz.  
duck with thick traction rubber top.  
Reversible direction of travel. 3-  
phase gearhead motor.

ASK OUR ENGINEERS FOR  
SPECIFIC SUGGESTIONS

**METZGAR CONVEYOR CO.**

MFRS. OF WHEEL & ROLLER GRAVITY  
& LIVE ROLLER CONVEYORS • POWER  
BELT CONVEYORS • SWITCHES • AC-  
CESSORIES & REEL DOLLIES  
GRAND RAPIDS 4, MICH

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FLOW • FEBRUARY, 1954

### Pulpwood Loader

A device which enables an operator to load both sides of a flat car from one side, and which carries

a pay load of 9000 lbs., is now offered by Clark Equipment Co. as an attachment for the Ross Series 151.H fork lift truck. Called the "Pulp-loader", it is fully hydraulic and controlled from the driver's seat. It tilts 92½ inches from vertical and can be raised to a height of 26 ft. 10 in. Spliced load cables support the load and are freed through operation of a hydraulic hook release. The device can lift a unit of pulpwood, usually 1¾ cords, from a truck and place it on a flat car in one operation. In use, the Pulploader is lowered over the unit load, cables slipped under each end and hooked together. The load is then raised clear of the truck and the fork-lift tower tilted into its backward position, allowing the unit load to rest against a bumper grill, which evens the face of the load. When the load is in position on the flat car, cable hooks are disengaged by driver control. The operator can even the load by bumping protruding sticks with the heavy bumper grill.

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**Moving or Storing is Rapid, Convenient and Inexpensive with**

### IRONBOUND SEMI-LIVE SKID PLATFORMS



Ruggedly built with capacities up to 2500 lbs. These units are quickly made mobile with the use of low cost lift jacks . . . One of the methods that Ironbound engineers use to increase production and conserve space at low cost.



#### SEMI-LIVE SKID WITH BOX TOP

. . . permanently attached or removable. Also available with many other superstructures to "Short-Haul" your products thru production or into storage. Useful in hundreds of spots in every plant.

#### THE IRONBOUND "SAFETY-SKID" WITH ROUND CORNERS

Ironbound construction assures long hard use with complete safety to product and operator. Still the time proven method for handling of materials efficiently and economically.



### IRONBOUND

BOX & LUMBER COMPANY  
Materials Handling Division

38 HOFFMAN PLACE • HILLSIDE, N. J.

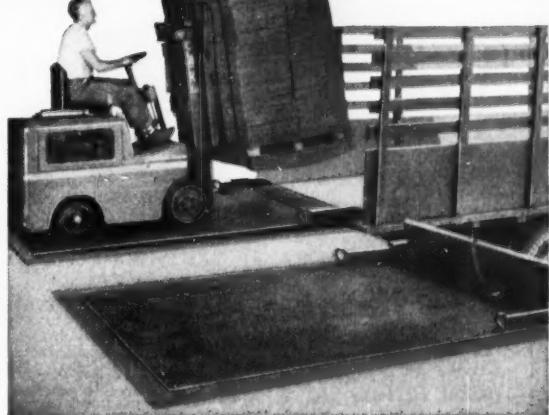
MANUFACTURERS OF QUALITY BUILT SKIDS, SEMI-LIVE SKIDS,

FLOOR TRUCKS, ROLL TRUCKS, DOLLIES AND PRY BARS

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FLOW • FEBRUARY, 1954

YOUR SHIPPING DOCK  
WILL HANDLE MORE  
TONNAGE, FASTER, WITH  
**JOYCE**  
HYDRAULIC  
**VARI-RAMPS**



**J**JOYCE Hydraulic Vari-Ramps quickly pay for themselves by enabling shipping departments to handle more tonnage on a given length loading dock, faster, and with fewer men. This is possible because they fit all trucks . . . adjust quickly to the truck bed level . . . and are self-leveling with the truck bed as it varies in height, during loading and unloading.

Joyce Vari-Ramps are available in sizes, capacities, and vertical movements to exactly fit your requirements . . . electric-hydraulic or air-oil operated . . . hand or foot valve, or push button control . . . platforms of all steel, welded construction with non-skid decks.

And when you investigate the price, you will find the initial cost, the installation cost and the operation cost are all on the low side.

The Joyce-Cridland Co. manufactures a complete line of Materiallifts, Elevators, Cross-over Bridges, Hydraulic Feed Tables, Factory Truck Lifts and Industrial Jacks.



WRITE TODAY FOR  
COMPLETE INFORMATION

### THE JOYCE-CRIDLAND CO.

DAYTON 3, OHIO, U.S.A.

IN CANADA: Midland Foundry & Machine Co., Ltd., Midland, Ontario

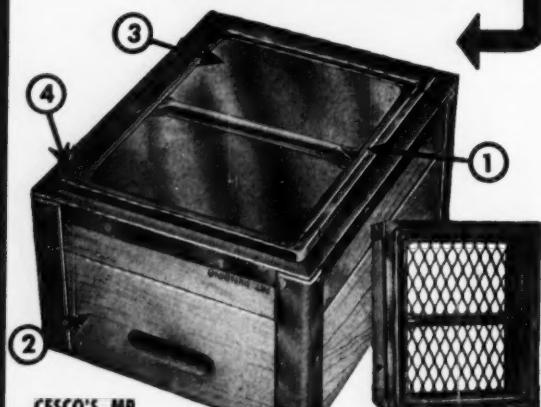
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## Cesco's TOTE-SHOP BOXES

...Do Your Job • EFFICIENTLY • EASILY • ECONOMICALLY  
ON CONVEYORS, PALLETS, HAND TRUCKS,  
SKID PLATFORMS, OR WHAT HAVE YOU



1. Heavy Duty Strut . . . Prevents Sag . . . Permits Bottom Flex . . . Distributes shock.
2. High Grade Hard Wood Lumber .
3. (FM) Flat Metal Bottom . . . likewise available in open type bottoms FEM-FPM-WM illustrated below.
4. Specially designed "Bottom Stacking Runner" . . . One piece . . . Rounded Corners (No Mitered Joints — No Distortion).



### CESCO'S MB (METAL BOTTOM) BOX

(Prices net - per box)	MB-20	MB-24
Lots of 2000.....	\$2.65	\$2.00
1000 — 1999.....	2.68	3.03
500 — 999.....	2.71	3.06
250 — 499.....	2.76	3.11
100 — 249.....	2.81	3.16

#### 2 STANDARD SIZES

MB-20: 14 1/4" x 11 1/4" x 9 1/4"  
MB-24: 17 1/2" x 11 1/4" x 9 1/4"

F. O. B. Northampton, Mass.

### CESCO'S WB (WOOD BOTTOM) BOX

Depending upon the material packed and the handling method stock sizes will accommodate loads up to 200 lbs.; possibly greater.

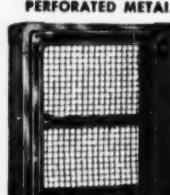
- Ruggedly constructed . . . steel reinforcing features of zinc coated prime stock . . . Self Stacking . . . convenient hand holes
- Binding rivets PLUS corner lock style yields maximum rigidity

Write today for quotations on special sizes . . . Please submit specifications.

FEM — FLATTENED EXPANDED METAL



FPM — FLAT PERFORATED METAL



WM — WIRE MESH

### CESCO'S WB (WOOD BOTTOM) BOX

(Prices Net - per box)	WB-1	WB-2	WB-3
Lots of 2000	\$1.96	\$2.14	\$2.28
1000—1999	1.99	2.17	2.31
500—999	2.02	2.20	2.34
250—499	2.07	2.25	2.39
100—249	2.12	2.30	2.44

No. 1 size — (I.D.) — 14 1/4" x 11 1/4" x 9"  
No. 2 size — (I.D.) — 18" x 11 1/4" x 9"  
No. 3 size — (I.D.) — 20" x 11 1/4" x 9"

F. O. B. Northampton, Mass.

• Wire Baskets • Special Pallets • Tote Trays

**CESCO CONTAINER CO.**

475 Fifth Avenue  
New York 17, N. Y.  
Factory Northampton, Mass.

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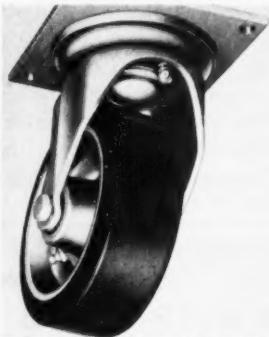
## Rotary Dumper Attachment

It takes less than 20 minutes to convert a truck from fork operation to dumping operation with its new rotary dumping mechanism says the manufacturer, Automatic Transportation Co. The attachment is slipped onto the forks of this Automatic FF-15 electrical industrial truck. Dumping action is by forward rotation of 190 deg. on a hydraulically actuated pinion gear arrangement. Permanently attached forks of the truck are hydraulically adjustable to facilitate clamping action for large or small size materials. Circle 193 on Reader Service Card for more information



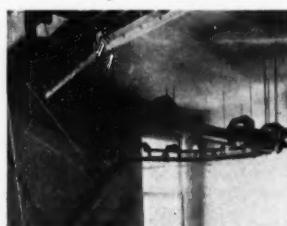
## Sealed Casters

Virtual elimination of need for lubrication is claimed for the new "3D" Series "H99" casters of The Bassick Co. The firm points out that a main swivel bearing baffle ring prevents entrance of dirt and water; a grease retainer prevents loss of swivel lubricants due to vertical drainage; and a wheel bearing seal excludes foreign matter and retains lubricant. Both swivel and wheel bearings are free of drag, the manufacturer says, since they have no pre-loaded frictional contact with moving parts. Seals are designed to permit flushing out of old lubricant, when required, by merely re-greasing through use of standard pressure lubrication equipment without danger of seal blowout. Circle 194 on Reader Service Card for more information



## No Lubrication Needed

Carburizing the socket and ring assembly of the Landahl Chainless Conveyor to Rockwell hardness #C-60 has eliminated the need for any lubrication throughout the entire system, according to the manufacturer, the Landahl Conveyor Co. The firm reports that tests—in which socket and ring parts were subjected to the equivalent of years of use—indicated considerably less wear for the treated parts than



on similar, non-carburized, grease-packed parts. Tests are said also to have shown that the constant sliding movement of the carburized socket and ring burnished and did not gall the parts, and that, as a result, contact points of both parts remain matched surfaces as minute wear occurs. The manufacturer notes that this feature makes the conveyor especially suitable for moving materials that would be damaged by dripping grease—and for transporting materials through furnaces, kilns or ovens because temperatures to 700 deg. have little effect on the working parts. Reduction of fire hazard with elimination of grease is also noted.

Circle 195 on Reader Service Card for more information

#### Multi-Purpose Tractor Loader

The combination of the Model 3-WI Loader on the Oliver "OC-3" crawler tractor is intended by the manufacturer



—The Oliver Corp.—to accomplish a great variety of handling jobs with minimum investment in equipment. The "package" of six

tools for the loader comprises a 17 cubic foot

# TAKE *Another* LOOK

at this  
**Conveyor Roll Bearing!**



- It never requires lubrication under any conditions.
- It operates as well indoors as out—under dry, dusty conditions, or where submerged or subjected to moisture.
- It resists abrasion—never sticks.
- It can be installed at low cost without special tools in a minute or two on all roller conveyors.
- It even operates well at minus 30°F.
- It will never drip and is non-contaminating.
- It is available for use with standard tubing with O.D. up to 4".

IT'S AN *Arguto*

#### "NO MAINTENANCE"—NO REPLACEMENT OILLESS BEARING—

One of millions giving year-in, year-out service—many are specified on new roller conveyors; many are replacing high maintenance conventional bearings in old conveyors.

**IMPROVE YOUR ROLLER CONVEYOR PERFORMANCE—SPECIFY OR INSTALL ARGUTO—IMMEDIATE DELIVERY**

**Write for Arguto Catalog No. 210 or send sample bearing or dimensions.**

**ARGUTO OILLESS BEARING COMPANY**

143 W. BERKLEY STREET  
PHILADELPHIA 44, PA.

20 years  
without a drink

The New Grand Lift Stacker, a hand truck with an electric-hydraulic lift system, takes all the slow, back breaking work out of loading and unloading trucks, moving and stacking crates, boxes, kegs and other heavy objects.

HAVE A DEMONSTRATION IN YOUR PLANT TODAY

**ALLIED MFG. & SALES CO.**  
201 N. WELLS • CHICAGO 6, ILL.



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FLOW • FEBRUARY, 1954

Circle No. 144 on Reader Service Card for more information

Circle No. 118 on Reader Service Card for more information

# Troubled with broken floors?

Fix Them Fast With

# SPEED PATCH

without halting traffic

World's finest fastest floor fixer! Simply patch holes and truck over them immediately, no waiting. Ready-mixed. Millions of pounds used regularly by industry. Write for details.



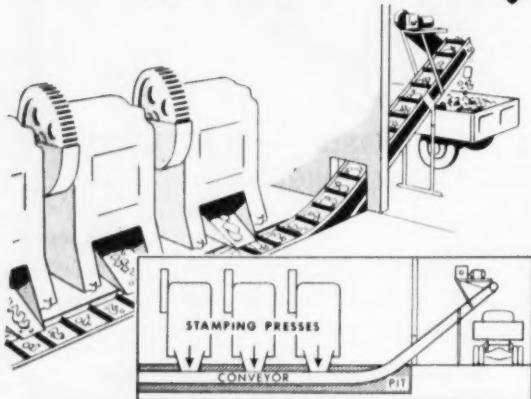
Takes only one minute per sq. ft.

## ROCK-TRED Corporation

Manufacturers of a Complete Line of Building Maintenance Materials  
7440-7450 North St. Louis Avenue • Skokie, Illinois  
In Canada: Rock-Tred Corporation (Canada) Limited, Toronto 5



## Better SCRAP Handling!



### with SHEEHAN METAL MESH BELT CONVEYORS

Stamping, forging and various other types of scrap.

- Designed for modifications according to type of tools, space available, type of scrap and rate of removal.
- Constant or variable speed drive unit upon request.
- Cleats spaced on belt to give continuous removal scrap handling.

Inquire today how to solve your scrap handling problems with Sheehan Conveyors.

R. T. SHEEHAN CO. 8073 N. Territorial Rd.  
Plymouth, Michigan

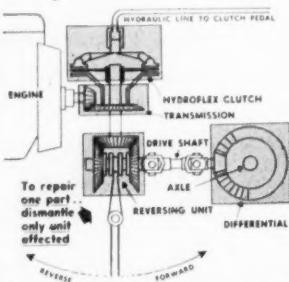
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168

bucket for relatively light materials, a half yard bucket for heavier duty digging and handling, bulldozer and backfiller blade, "V" snow plow, lifting fork, and lifting boom. Changing from one attachment to another is said to take but a few minutes and control of the hydraulic system of the loader to be simple, positive, and easy on the operator. These attachments may be purchased individually. The unit shown in operation is the boom attachment.

Circle 196 on Reader Service Card for more information

### Guaranteed Clutch

Transitier Truck Co. reports that an unconditional guarantee of 12 months has been placed on the Hydroflex Clutch, an exclusive feature claimed for the firm's Hi Duty Lift trucks. This clutch, designed specifically for lift truck operation, is hydraulically actuated and operates in conjunction with the Hi Duty Uni-Drive transmission. Features stressed are mechanical simplicity and ease of repair. The power train uses only a forward-reverse lever and a clutch pedal. The entire clutch assembly, the



### KRANE KAR SWING-BOOM MOBILE CRANE

## SAVED US \$3824.24 IN 8 MONTHS,"

Says V. James DeNaples,  
TECHNICAL SERVICES FOREMAN,  
NORMA-HOFFMANN  
BEARINGS CORP.

1½, 2½, 5, 10,  
& 12½ ton cap.

"THIS VERSATILE YARD CRANE simplifies our materials-handling," says Mr. DeNaples, "cuts operations and travel trips, saves us a considerable amount of work and time. Our KRANE KAR speeds unloading of incoming materials . . . transports and stacks them at storage . . . loads them on floor trucks for delivery inside (long shafts of tubing, stacked bearing ring forgings, 800 and 1000 lb. coils of steel strip). Also loads outgoing scrap and waste drums on trucks and gondolas; tows sludge wagon from grinding waste chute to waste dump, up-ends it, tows it back." MONTHLY NET SAVINGS - \$478.03!

Gas or diesel, 9 to 37 ft. booms or adjustable telescopic booms; pneumatic or solid rubber tires; electric magnet, clamshell bucket and other accessories.

Ask for Bulletin No. 89



SILENT HOIST & CRANE CO., 888 63rd ST., BROOKLYN 20, N.Y.

Circle No. 124 on Reader Service Card for more information  
FLOW • FEBRUARY, 1954

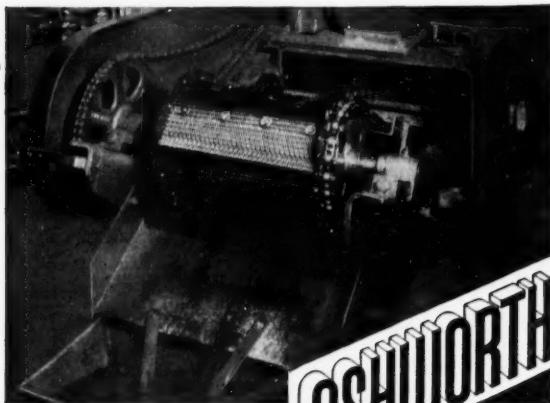
firm notes, may be removed and replaced in less than 30 minutes by any mechanic.

Circle 197 on Reader Service Card for more information

#### Conveyor for Forgings, Stampings

Featured by the R. T. Sheehan Co. in their conveyors, offered particularly for handling hot and cold forgings and stampings, is their "Positive Drive, Spike Studied Pulley". Used with a woven wire belt with bucket-like flights, it is said to eliminate slippage and the necessity to adjust a belt due to heat expansion. Operations are thus unaffected by high temperatures. With this conveyor, the manufacturer also points out, pits are not needed under forge and stamping presses because of a minimum under-clearance of 6 inches from top of belt. Designed to specifications for stationary or adjustable height, the equipment is said to require minimum floor space to move normal loads thirty feet per minute or faster.

Circle 198 on Reader Service Card for more information



#### Process Belts by **ASHWORTH**

for Annealing • Brazing • Bluing  
Burn-off ovens • Carburizing  
Core Baking • Hardening • Metal Finishing  
Metal Washing and Degreasing • Nitriding  
Pickling • Quenching • Sintering • Tempering

*Engineered to Keep Your Product on the Move*

WRITE FOR  
ILLUSTRATED  
CATALOG 52F

**ASHWORTH BROS., INC.**  
METAL PRODUCTS DIV. • WORCESTER, MASS.

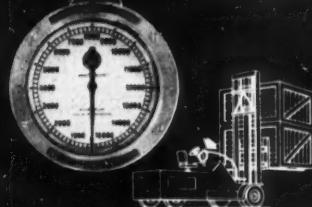
Sales Engineers: Buffalo • Chattanooga • Chicago • Cleveland • Detroit • Kansas City  
Los Angeles • New York • Philadelphia • Pittsburgh • Rochester  
Seattle • St. Paul • — Canadian Rep., PECKOVER'S LTD. - Toronto • Montreal

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**FLOW** • FEBRUARY, 1954

# One fine

could have bought several

## MARTIN-DECKER LIFT TRUCK SCALES



# Weigh it! as you lift it

This inexpensive device shows the driver the exact weight picked up thus assuring a full load with safety. It can be used to totalize loads and check records of stock and inter-plant storage. Permits floor weight distribution. Prevents elevator overloads. Safeguards equipment and life.

*Fits any hydraulic cylinder type lift truck*

#### DISTRIBUTORS:

##### DETROIT

George Meeks  
Metal Products Co.,  
6432 Cass Ave.

##### PHILADELPHIA

A-1 Industrial Equipment, Inc.  
1202-22 Frankford Ave.

##### PITTSBURGH

Brinker Supply Company  
6545 Hamilton Ave.

##### BUFFALO

Brodie Industrial Trucks  
1450 Michigan Ave.

##### NEW HAVEN

C. E. Reutter Corp.  
P. O. Box 2922,  
Westville Station

##### MALDEN, MASS.

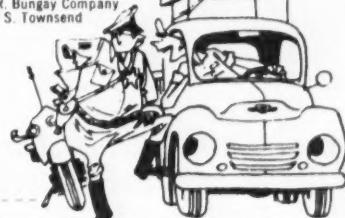
Brodie Industrial Trucks, Inc.  
50 Commercial St.

##### NEW YORK

Gilbert-Tucker Associates  
130 West 42nd St.

##### SYRACUSE

H. R. Bungay Company  
402 S. Townsend



- Please send literature on Martin-Decker Lift Truck Scale.  
 Have local representative call for an appointment.

DEPT. F-24

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

**MARTIN DECKER CORP.**  
LONG BEACH, CALIFORNIA

Circle No. 157 on Reader Service Card for more information

## Classified Advertising Section

### USED EQUIPMENT — MEN — JOBS — LINES

Rates: for "Positions Wanted" \$8.00 minimum, limit 25 words. For all other classifications \$10.00 minimum for 25 words; each additional word 25c. Boldface type or all caps, \$12.00 minimum for 25 words, each additional word 35c. Box address counts as five words. All insertions payable in advance.

#### FOR SALE

Getman Scoot-Crete bulk material handling truck. New—never used. Save  $\frac{1}{2}$ . The Metal Fusion Co., 1515 East 40th St., Cleveland 3, Ohio. Phone EN 1-0626.

#### FORK LIFT TRUCKS

TOWMOTORS—LT-25, LT-44, LT-50, LT-56, LT-62, and LT-72. CLARKS—Clippers, Carloaders, Utilitracs, and Yardlifts. HYSTERS—20s, 40s, 75s, and 150s. All in various lifting heights and fork lengths. Many other makes and models to choose from. We RENT—BUY—SELL—LEASE fork lift trucks. ATLAS LIFT TRUCK RENTALS, INC., 1139 So. Wabash Ave., Chicago 5, Ill., Webster 9-3438.

LF-50 Automatic Skylift Fork Truck complete with 360° roll grab for rolls up to 3500# and 52" diameter, two Exide batteries, charging equipment, and spare parts. Address inquiries to FLOW, Box 2254.

#### LINES WANTED

Large established New England handling equipment distributor with very effective New York sales and engineering organization seeks additional quality lines on an exclusive basis for the greater New York City area. Particularly interested in conveyors, dockboards and bridge ramps. Write J. M. Flaherty, sales manager, 520 Fifth Ave., New York 36, N. Y.

#### FRANCHISE WANTED

Monorail line of either I-Beam or fabricated rail. For 44 counties in central Indiana. Write c/o FLOW, Box 2154.

#### REPRESENTATIVE WANTED

Manufacturers Agent with established industrial accounts interested in handling complete line of three-dimensional scale models—product, plant layout, architectural, dioramas—nationally advertised, used by leading companies. Send outline of experience and lines currently handled. Knight Models, Inc.,

600 West Jackson Blvd., Chicago 6, Illinois.

#### DISTRIBUTORS WANTED

##### WANTED—DISTRIBUTORS AND/OR MANUFACTURER'S REPRESENTATIVES

The well-established LUG-ALL WINCH HOIST is seeking distributors in uncovered territories. Well rated distributors who will carry an inventory are preferred—especially those servicing building contractors, maintenance superintendents, plumbing and heating dealers, factory and mine managers, etc. The LUG-ALL WINCH HOIST weighs only 8 $\frac{1}{4}$  pounds, sells for \$35.25. Five year record of repeat business is impressive. LUG-ALL does the work of five men on block and tackle. Write us fully and frankly, outlining your firm's experience and contacts. Mention other lines handled and extent of territory you cover. Your inquiry will be answered within 48 hours. THE LUG-ALL COMPANY, Wynnewood 71, Pa.

#### HELP WANTED

##### SALES ENGINEER

Well-known national conveyor manufacturer located in East desires Sales Engineer with experience in material handling equipment field (conveyor preferred). Fast growing firm. Unlimited possibilities for ambitious man interested in a good future. Send complete details, past experience, including references and salary expected. Write c/o FLOW, Box 2354.

**for Better Belt Joints**

To keep belts in service longer, use only GENUINE Clipper Belt Hooks applied with Clipper Belt Lacers.

**use Clipper Belt Hooks**

Clipper Hooks are made of the finest quality wire—BETTER than ever before—produced for our exclusive use. Hooks hold with firm, sure grip—give longer satisfactory service.

#### and Clipper Belt Lacers!

With the Clipper No. 9 Portable Lacer, you can lace up to 6 inches of belt in one quick, easy operation. For wider belts, merely repeat the operation.

Phone your Industrial Distributor for a demonstration!

CLIPPER BELT LACER COMPANY, GRAND RAPIDS 2, MICHIGAN, U.S.A.



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170

## Safeway LIFT TRUCKS are right for your business

17 LOW-PRICED Models  
to choose from



SAVE time, money, manpower with this modern equipment. Powerful Safeway portable Lift-Trucks are now available in a wide range of hydraulic and battery powered models with 1250 pound capacity. ALL MODERATELY PRICED • WRITE FOR SPECIFICATIONS AND PRICES



INDUSTRIAL EQUIPMENT CORP.  
184 N. FRANKLIN ST. • CHICAGO 6, ILL.

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short-distance hydraulic manipulation of materials too heavy  
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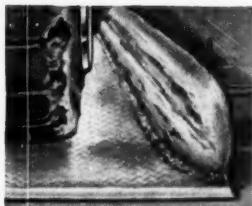
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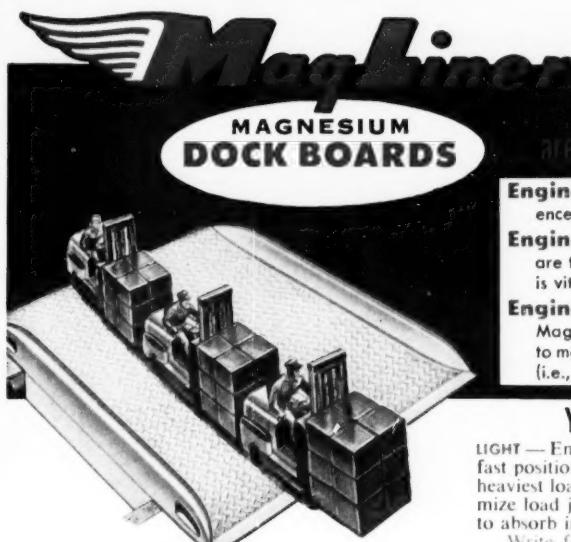


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